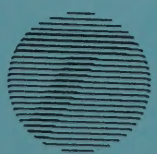
Cooperative State Planning And Research Program: Part II

OCTOBER 1997-SEPTEMBER 1998: SPR-0010(982)



TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU
NEW YORK STATE DEPARTMENT OF TRANSPORTATION

LIBRARY
NYS DEPT OF TRANSPORTATION
ENGINEERING R & D BUREAU
BUILDING 7A, ROOM 600
1220 WASHINGTON AVENUE
ALBANY, NY 12232-0869

COOPERATIVE STATE PLANNING AND RESEARCH PROGRAM: PART II OCTOBER 1997-SEPTEMBER 1998: SPR-0010(982)

September 1997

TRANSPORTATION RESEARCH AND DEVELOPMENT BUREAU
New York State Department of Transportation
State Campus, Albany, New York 12232-0869

TABLE OF CONTENTS

Preface/Funding Summary 1

Table 1. Summary of Part II SPR-0010(982) 10/97 - 9/98 iv
Table 2A. Projects Not Yet Initiated: Part II SPR-0010(982) 2
Table 2B. Consultations Not Yet Initiated: Part II SPR-0010 (982) 2
Table 3. 100% SPR Pooled-Fund Projects SPR-0010(982) 3
Figure 1A. Organizational Structure 4
Figure 1B. Bureau Organizational Chart 5

Section I. Technical Assistance and Technology Transfer Program 7

Section II. Experimental Program Type A & B Continuing Studies 53

Section III. Proposed Projects Not Yet Initiated 71

Section IV. 100% SPR Pooled-Fund Projects 75

Section V. Administration/Training 91

Section VI. Completed Projects 101

Section VII. 100% State-Funded Projects 105

TABLE 1
SUMMARY OF COOPERATIVE STATE PLANNING AND RESEARCH PROGRAM:
SPR–0010(982) PART II 10/97 – 9/98

Project Number	Project Title & Research Supervisor	Annual Plan
10–01	Administration	330,000
10–02	Administration – Proj Selection/Prog Development	50,000
10–03	Administration – UTRC	10,000
10–04	Administration – Consortium/Contract Research	75,000
16–00	Training	40,000
	Subtotal	505,000
TECHNICAL ASSISTANCE AND TECHNOLOGY TRANSFER PROGRAM		
11–0	Information Exchange	350,000
11–01	Engineering Soils Survey (Walton)	5,000
11–02	Information Exchange – Library Operations (Frederick)	100,000
11–03	Information Exchange – Newsletters (Frederick)	15,000
11–04	Information Exchange – Library Support (Frederick)	20,000
12–0	Consultation	500,000
12–22	FHWA/SHRP–LTPP (Yang)	60,000
12–28	ERTAP Consultation	20,000
12–38	Consultation – Statistics (Sandhu)	100,000
12–48	SHRP Superpave (Yang)	35,000
12–49	Falling Weight Deflectometer (Yang)	50,000
12–52	Geosynthetic Slopes and Retaining Walls (Sandhu)	20,000
12–57	Loss of Entrained Air Hardened Concrete (Yang)	60,000
12–60	Field Investigation Svs Life Corr Steel Culverts (Sandhu)	20,000
12–63	Const/Eval Noise Barrier With Recycled Plastic (Alampalli)	42,000
12–64	Develop Specifications Recycle Plastic For Hywy Application (Alampalli)	50,000
12–65	NDT Method Estimating Pavement Layer Thickness (Yang)	20,000
12–66	Quality Performance Mechanics For ITS Equipment Services (Valenti)	25,000
12–67	Peer Review (Perry)	10,000
13–0	Implementation	15,000
13–10	Implementation of Glasgrid (Valenti)	2,000
13–14	Implementation – SHRP Products (Valenti)	30,000
13–19	Implementation Shear–Key Performance Findings (Alampalli)	20,000
14–01	Local Technical Assistance Program (Valenti)	10,000
15–01	Engineering Computer Systems Support (Sandhu)	75,000
20–00	Contract Research (Sandhu)	1,000,000
	Contract Research – Cornell	935,000*
20–04	Eff Mkt of Transit Systems and HOV (Svejkovsky)	127,055*
20–05	Rev and Dev of Life–Cycle Cost and Networking (Shufon)	130,325*
20–06	Lateral Protection Short–Term Work Zones (Mencucci)	80,000*
20–08	CADD Expert Sys Blowing Snow Control (Sandhu)	465,000*
	Subtotal	2,654,000
EXPERIMENTATION PROGRAM: TYPE A CONTINUING STUDIES		
224–1	Development of an Overlay Design Procedure for NYS (Yang)	80,000
225–1	Hydr–Frac Test Apparatus & Proc Deter Aggregate Durability (Sandhu)	25,000
226–1	Pile Load Dis Earth Press Integral Abutments (Alampalli)	120,000
227–1	Compos Mat'ls Hy Bridge Const (Alampalli)	75,000
228–1	Post–Tensioning Steel Bridge Members (Alampalli)	50,000
	Subtotal	350,000
EXPERIMENTATION PROGRAM: TYPE B CONTINUING STUDIES		
217–1	Deter on Long–Term Perf of Chem Grouts in Concrete (Sandhu)	10,000
218–1	Engineering Automation Tool Evaluation/Implementation (Bell)	30,000
220–1	Evaluation of Winter Traffic Accidents (Sandhu)	15,000
	Subtotal	55,000
EXPERIMENTATION PROGRAM: PRE–PROJECT PLANNING		
	Subtotal	0
EXPERIMENTATION PROGRAM: PROJECTS NOT YET INITIATED/CONTINGENCIES		
	Projects Not Yet Initiated	0
	Consultations Not Yet Initiated	5,000
	Contingencies **	3,106,788
	Subtotal	3,111,788
GRAND TOTAL SPR–0010(982) PART II FY 10/97–9/98		6,675,788

* Prior year funds; not included in total.

** Includes preprogrammed funds and estimated '97 savings.

PREFACE

This work program is a statement of transportation research and development activities that qualify for reimbursement from Federal Cooperative State Planning and Research (SPR) funds. It describes work that will be performed during the program period – October 1997 through September 1998. Projects completed during the last six months are listed in Section VI, which also lists reports published in that period and Experimental Features that were evaluated in SPR projects. This section, along with the rest of the work program, serves as one of two semiannual reports on the research program.

Section VII lists all ongoing non-federally funded research projects. This section along with the rest of this publication presents the total research program.

Section I	Technical Assistance & Technology-Transfer Program
Section II	Experimentation Program: Types A & B Continuing Studies
Section III	Proposed Projects Not Yet Initiated
Section IV	Pooled SPR Fund Projects
Section V	Administration/Training
Section VI	Completed Projects
Section VII	100% State Funded Projects

All salary allocations included an estimated fringe-benefit factor of 37.60 percent (annual salary x .3760). The actual factor, to be established by the New York State Department of Audit and Control and Division of the Budget, represents the employer's share of workers compensation, hospitalization, retirement-fund charges, and other contributions.

SPR PART II FUNDING SUMMARY

SPR PART II		80% FEDERAL	100% FEDERAL	PROGRAM TOTAL	REIMBURSABLE TOTAL
RESEARCH PROGRAM *(See Table 1 for details)*	086-0010-982	6,675,788		6,675,788	5,340,630
FUNDED ACTIVITIES					
TRB GENERAL SUPPORT	086-0010-976		221,200	221,200	221,200
NCHRP	086-0004-197		860,000	860,000	860,000
POOLED FUNDS	Various		392,000	392,000	392,000
LTAP	086-LTAP-982	150,000		150,000	120,000
IVHS PROGRAM COOR.	IVHS-02-983	115,000		115,000	92,000
TOTAL PART II		6,940,788	1,473,200	8,413,988	7,025,830
100% STATE FUNDED STATE ACTIVITIES *(See Section VII for details)*				TOTAL	
ADMIN STATE FUND	R01001801			60,000	
UTRC-CURING	R01239801			5,000	
TOTAL 100% STATE				65,000	

Table 2A
PROJECTS NOT YET INITIATED: SPR–0010(982) Part II

ERTAP PROJECT NUMBER	TITLE	ERTAP CLASS*	ESTIMATED TOTAL PROJECT COSTS	ESTIMATED 1997–98 PROJ COSTS
	ERTAP APPROVED SUMMER 1993			
93–052	Development of Improved Pavement Performance Prediction Model	1	120,000	0
			120,000	0

* Research project, applied

Table 2B
CONSULTATIONS NOT YET INITIATED: SPR–0010(982) Part II

ERTAP PROJECT NUMBER	TITLE	ESTIMATED TOTAL PROJ COST	ESTIMATED 1997–98 PROJ COSTS
93–082	Temperature Gradients in PCC Pavement for Different Regions in NYS	40,000	0
94–027	Effect of Vehicle–Generated Heat on Asphalt Pavement Rutting	50,000	0
94–028	Impact Perform Temporary Concrete Barrier Installed Transverse to the Roadway at Roadway Closure Sites	49,000	0
94–051	Analysis of Historical Cost Data	30,000	0
95–010	Selecting Design Criteria on Highway and Bridge Design Projects	30,000	0
95–055	In–Situ Moisture Content and Humidity Using NDT Methods	30,000	5,000
95–073	Determination of Lane Storage and Downstream Transition Requirements	35,000	0
		263,000	5,000

Note: Consultations listed in numeric rather than priority order.

TABLE 3
100% SPR POOLED-FUND PROJECTS: SPR-0010(982) PART II

TITLE OF STUDY		FUNDING COMMITMENT	FY 1997	FY 1998	FY 1999	FUTURE
EXISTING NATIONAL STUDIES	SPR-2					
Testing of Roadside Safety Systems*	(146)	$300,000	$0	$300,000	$0	$0
Performance Evaluation of Crumb Rubber Modified (CRM) Asphalt Pavements	(166)	$35,000	$5,000	$5,000	$5,000	$0
High Strength Concrete for Bridges	(170)	$80,000	$20,000	$0	$0	$0
Development and Validation of Traffic Data Editing	(182)	$45,000	$15,000	$0	$0	$0
Long Term Field Monitoring of Mitigating Corrosion Inhibitors	(184)	$30,000	$6,000	$6,000	$6000	$6,000
Roadside Safety Hardware Crash Tested to NCHRP Report 350	(187)	$20,000	$5,000	$5,000	$5.000	$0
Support Maintenance and Refinement of the National Trans. Control/ITS Communications Protocol (NTCIP)	(189)	$25,000	$5,000	$5,000	$5,000	$5,000
Durability of Geosynthetics - Phase II	(192)	$10,000	$10,000	$0	$0	$0
SUBTOTAL			$66,000	$321,000	$21,000	$11,000
EXISTING REGIONAL STUDIES	SPR-3					
Lateral Work Zone Protection *	(028)	$160,000	$0	$0	$0	$0
Travel Model Improvement Program	(035)	$20,000	$10,000	$0	$0	$0
PENNDOT Epoxy Rebar Study	(036)	$150,000	$75,000	$0	$0	$0
SUBTOTAL			$85,000	$0	$0	$0
PROPOSED NATIONAL STUDIES						
Bridge Fatigue Screening, Monitoring and Retrofitting Manual	S-98-26	$30,000	$0	$10,000	$10,000	$10,000
Engineered Flowable Fill Bridge Approaches plus Abutment and Culvert Backfill Using Inexpensive Recycled Materials	S-98-31	$12,000	$0	$6,000	$6,000	$0
Optimal Acceptance Procedures for Statistical Construction Specifications	S-98-36	$20,000	$0	$10,000	$10,000	$0
Compilation and Evaluation of Results from High Performance Concrete Bridge Projects	S-98-39	$17,500	$0	$10,000	$7,500	$0
Development of Portable Scour Monitoring Equipment	S-98-45	$10,000	$0	$5,000	$5,000	$0
SUBTOTAL			$0	$41,000	$38,500	$10,000
PROPOSED REGIONAL STUDIES	SPR-3					
Urban Mobility Study	(049)	$45,000	$0	$15,000	$15,000	$15,000
Fillet Welding Procedure Qualificaqtion Research	(046)	$5,000	$0	$5,000	$0	$0
Development of a New Guardrail End Treatment - Phase II		$10,000	$0	$10,000	$	$
SUBTOTAL				$30,000	$15,000	$15,000
TOTAL			$151,000	$392,000	$74,500	$36,000

* Coming from Contract Research funds - NYS share $80,000

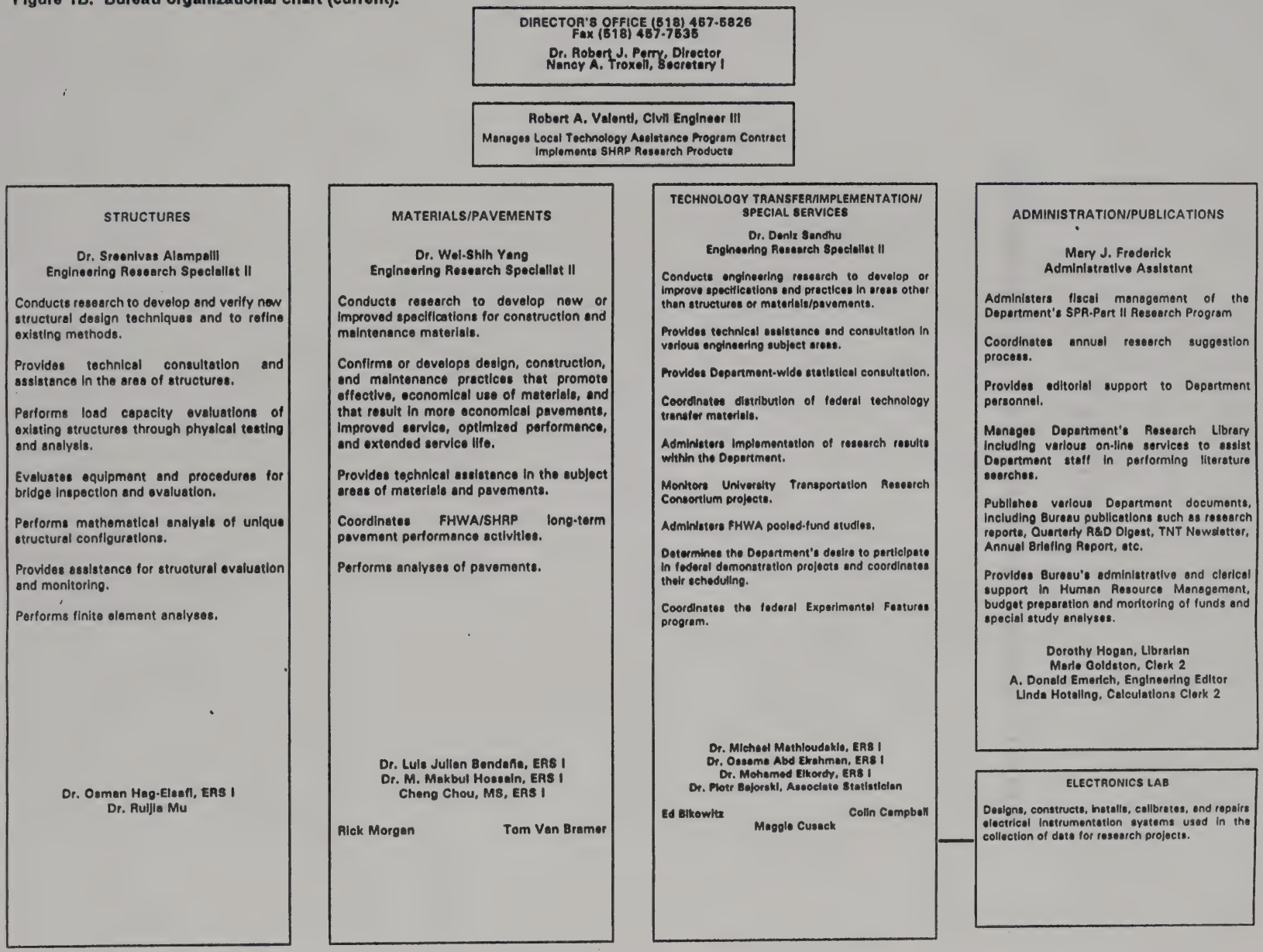
Figure 1A. Organizational structure (authorized). **Total Positions: 43**

- DIRECTOR
- CIVIL ENGINEER III
- ADMINISTRATION/PUBLICATIONS SECTION
  - SR. LIBRARIAN
  - CLERK II
  - SECRETARY 1
  - CALC. CLERK II
  - KEYBOARD SPECIALIST
  - ASSOC.ENG.RESEARCH EDITOR
- ADMINISTRATIVE ASSISTANT

SUBTOTAL: 9

	STRUCTURES	MATERIALS/PAVEMENTS	T²/IMPLEMENTATION/ SPECIAL SERVICES
ENGINEERING RESEARCH SPECIALIST II	1	1	1
ENGINEERING RESEARCH SPECIALIST I	3	3	4
ASSOC. STATISTICIAN			1
SENIOR STATISTICIAN			1
SENIOR COMPUTER PROGRAMMER/ANALYST			1
PROGRAM RESEARCH SPECIALIST II (TRANS.)			1
CIVIL ENGINEER I	3	4	5
JUNIOR ENGINEER	1		0
LAB EQUIPMENT DESIGN			1
ELECTRONIC EQUIPMENT MECHANIC			1
PRINCIPAL ENGINEERING TECHNICIAN			1
SENIOR ENGINEERING TECHNICIAN			1
TOTAL	8	8	18

Figure 1B. Bureau organizational chart (current).



SECTION I

Technical Assistance and Technology Transfer Program

PROJECT: **11.0 INFORMATION EXCHANGE**

SCOPE: As the title implies, this project covers activities providing for the transfer of technical information from one party to another. Other activities charged to this project include coordination of experimental feature work plans, support activities to the NCHRP Program, and coordination of pooled-fund projects. Examples of work performed under this project during the program period include:

1. On September 16, 1996, a student delegation from Hongkong (on a technology transfer program to the United States) visited the structures section. Jyotirmay Lall, and Dr. Ravirala of the Rensselaer Polytechnic Institute coordinated the visit.

2. Sam Elrahman coordinated the distribution of the following three HITEC reports to appropriate Department organizations: 1) "Guidelines for Testing of Seismic Isolation and Energy Dissipation Devices"; 2) "Evaluation of Troxler Model 4430 (Water-Cement Gauge)"; and "Evaluation of Findings: The Segmental Concrete Channel Bridge System."

3. Colin Campbell coordinated the distribution of the following three FHWA Technical Summaries to appropriate Department organizations: PTI Report 9606, "Relationship of Operating Speeds to Roadway Geometric Design Speeds"; FHWA-RD-95-184, "Channel Scour at Bridges in United States"; and FHWA-RD-96-092, "Performance of Epoxy Coated Rebars in Bridge Decks."

4. Wes Yang and Julian Bendaña reviewed and commented on the proposed "Rigid Pavement Design Guide" to be included in the AASHTO Guide for Design of Pavement Structures for the AASHTO Joint Task Force on Pavements.

5. Sreenivas Alampalli submitted a paper entitled "Experimental Data for System Identification Applications," for the 1997 ASCE Congress to be held in Portland, Oregon in April 1998. This paper provides a database of experimental data on constructed facilities such as bridges. Alampalli is also coordinating with the Society for Experimental Mechanics (SEM) to post this database on their web page for easy access to the engineering community and for continuous growth of this database.

6. Dan McAuliffe, Julian Bendaña, Hong-Jer Chen, and Rick Morgan's article titled "How to Halt Premature Pavement Failure" was published in the Better Roads Magazine, Volume 66, No. 10, October 1996. The article discusses the effect of joint failure on pavement and the use of ACC overlays to solve the problem.

7. Sam Elrahman participated in the annual OECD Seminar on Development and Evaluation of Road Transportation Research Programs. He presented a paper titled: A Scientific Approach for Development and Implementation of Research Programs. The conference was held in Lyon, France, October 21-25, 1996.

8. Robert Valenti attended the third annual Local Bridge Conference in Syracuse, October 30-31, 1996, as well as two steering committee meetings before and after the conference. He also made a presentation at the meeting on the status of the bridge inspection and maintenance course being developed by the Department, as well as what's new in improved communication and training. Highlights of his presentation included tentative training dates in March and April 1997, and announcement of the Department's new web page, which was also demonstrated at the conference.

9. Robert Valenti coordinated the submission of a feature article on "Research Pays Off" to TRB for a future issue of TR News. Each of the Bureau's sections contributed to the article, which highlights the Bureau's ability to provide technical assistance, statistical consultations and longer-term research services to its clients. The co-authors of the article are Robert Valenti, Piotr Bajorski, Julian Bendaña, and Jyotirmay Lall.

10. The experimental data sources database prepared by Sreenivas Alampalli was posted by the Society for Experimental Mechanics (SEM) on their web page for further development of the database and use by engineers and researchers. This database is accessed at the following web address: http://www.sem.bethel.ct.us/sem/imac/general/expers.html.

11. On November 5, 1996, Sreenivas Alampalli and Robert Valenti briefed visiting Bridge Engineer Angela McDonnell of the Queensland Department of Main Roads, Australia, on structures research activities at the Transportation Research and Development Bureau.

12. Sreenivas Alampalli attended the 67th Shock & Vibration Symposium, which was held November 18-21, 1996 in Monterey, California and presented two papers titled "Bridge Damage Detection by Experimental Modal Analysis" and "Dynamic Response of Wall-Backfill Retaining Systems."

13. Jyotirmay Lall and Ruijia Mu prepared a presentation entitled "Retrofitting the Suffern Bridge Interchange Against Support Uplift," for the Technical Services session of the AGC/DOT Technical Conference. On December 4, 1996, the presentation was made by Jyotirmay Lall and Tom Morreale of the Structures Division.

14. TNT was published and distributed for Fall 1996.

15. Sreenivas Alampalli, Osman Hag-Elsafi, David Elwell, Wes Yang, Makbul Hossain, Peter Bajorski, Deniz Sandhu, and Robert Valenti attended the TRB Annual Meeting held in Washington, D.C., January 13-16, 1997, and attended several sessions and committee meetings. Sreenivas Alampalli presented a paper titled "Diagnostic Load Testing for Bridge Load Rating." Osman Hag-Elsafi presented a paper titled "Noise Barriers Using Recycled Plastic Lumber," co-authored by David Elwell, and G. Glath and M. Hiris of the Landscape Architecture Bureau. Makbul Hossain presented a paper titled "Frictional Characteristics of Sand and Sand-Deicer Mixtures on Bare Ice" by Makbul Hossain, Peter Bajorski, and Wes Yang. Peter Bajorski also presented a paper (co-authors: Robert Perry and Donald Streeter) on "Applying Statistical Methods for Further Improvement of High-Performance Concrete for New York State Bridge Decks."

16. Wes Yang attended the TRB Expert Task Group on "State DOT Usage of the LTPP" data meeting on January 10, 1997 in Washington, D.C.

17. Makbul Hossain attended a HITEC technical panel meeting on ICE BAN on January 29, and 30, 1997 in Washington, D.C. The main purpose of this meeting was to develop a test and evaluation plan for ICE BAN. This innovative product has been found very effective, even at 0°F, by several towns and counties in New York and elsewhere during anti-icing and de-icing snow and ice control operations.

18. An article contributed by Sreenivas Alampalli entitled "Database of Experimental Data Sources" was published in the January issue of IMAC News, a newsletter sponsored by the Society for Experimental Mechanics.

19. The Department's ballot rating the 135 second-stage problem statements for NCHRP FY 98 program was compiled and returned to NCHRP.

    The request for first-stage problem statements for the NCHRP FY 99 program has been received and distributed to Department organizations.

20. The request for problem statements for the FY 98 Transit Cooperative Research Program (TCRP) was received and forwarded to the Passenger Transportation Division.

21. The request for problem statements for the FY 98 National Pooled-Fund Research Program was received and distributed to Department organizations.

22. Sreenivas Alampalli will serve as a member of the ASCE Technical Committee on "Methods of Analysis" and also on TRB Committee A2K01, "Soils and Rock Instrumentation."

23. Wes Yang was invited to make a presentation on "State Usage of the LTPP Data" at the North Atlantic LTPP Regional Meeting to be held in Hartford, CT April 23-24, 1997.

24. On March 24 and 25, 1997, Maggie Cusack attended the Institute for Transportation Engineers International Conference on "Transportation and Sustainable Communities", in Tampa, Florida. She also presented the paper entitled, "National Institutional Barriers to Development of Bicycle and Pedestrian Facilities in Transportation Agencies in the United States."

25. Ten problem statements were received from Department divisions and offices for the FY 98 National Pooled-Fund Research Program and were submitted to FHWA.

26. Julian Bendaña attended the NCHRP Project, 1-35 "Guidelines for Developing Pavement Performance Trends" panel meeting in Washington, DC April 28-30, 1997.

27. Sam Elrahman conducted a survey to solicit the Department's input on the merit of the Transportation Association of Canada's (TAC's) research projects. Survey results were forwarded to TAC. Several project reports were requested by program areas. Reports will be distributed upon receipt from TAC.

28. Sreenivas Alampalli met with David Strazzar to investigate creating a web page for TR&DB on the NYSDOT web site. Based on this discussion, Sreenivas Alampalli and Mary Frederick drafted a memo to the Office of Public Affairs, requesting their permission to post TR&DB news on the Department web site.

29. Wes Yang attended a TRB LTPP Data Analysis Expert Task Group meeting May 5-6, 1997 in Washington, DC. He also attended the NCHRP 10-44A "Determination of Insitu Materials Properties of Asphalt Concrete Pavement Layers" panel meeting to develop an RFP.

30. Sreenivas Alampalli attended the Eighth National Conference on Wind Engineering held in Baltimore, Maryland, June 5-7, 1997.

31. Robert Perry chaired the AASHTO Region 1, Research Advisory Committee meeting in Laconia, New Hampshire, June 24-25. Sreenivas Alampalli, Deniz Sandhu, Robert Valenti, and Wes Yang attended the meeting and made presentations on the Department's research program.

32. Makbul Hossain attended the Connecticut SuperPave open house in Montville, CT on June 26, 1997. The open house included a) description of Connecticut SuperPave SPS-9A Project on State Route 2, b) FHWA Mobile Asphalt Lab demonstration and discussion, and c) Group tour of filed job site.

33. Julian Bendaña visited the Minnesota Road Research Project and the Office of Minnesota Road Research to discuss any interest New York

might have in joint project development/participation. Also, how the collected data is being used in developing/calibrating mechanistic empirical performance models.

34. An article written by Robert Valenti on the collaboration of industry and government on the SHRP Lead State Program was published in the May-June edition of AGC's *Low Bidder*.

35. Sreenivas Alampalli was invited to attend the "Heated Bridge Technology Technical Working Group Meeting," held in Harrisburg, PA on February 12 and 13, 1997. Presentations were given by the four states who experimented with this technology, and economic feasibility of large-scale application was discussed. Sreenivas Alampalli distributed a survey form to workshop participants requesting specific information about this technology.

36. Wes Yang attended the annual AASHTO Joint Task Force on Pavements meeting in Seattle, WA on August 6-8, 1997. Development of the 2002 AASHTO Pavement Design Guide, SuperPave Implementation, FHWA pavement related activities, and NCHRP research projects were among the topics discussed in the meeting.

37. Wes Yang attended the 8th International Conference on Asphalt Pavements in Seattle, WA on August 10-14, 1997. More than 500 people from 40+ countries attended the conference. Papers on AC pavement design, and performance LTPP data, and SuperPave were presented by researchers.

38. On August 20, 1997, Glen Washer, an FHWA Program Manager at the Turner Fairbanks Highway Research Center (TFHRC), visited the Bureau. Sreenivas Alampalli, Joe Savoie, and Glen Washer visited the bridge from which the beams will be sent to TFHRC for testing. Sreenivas Alampalli and Glen Washer also met with John Iori of the Geotechnical Engineering Bureau to discuss possible use of the Center's laser monitoring system for deflection-measurement of mechanically stabilized earth retaining structures.

STATUS: On-going

ESTIMATED 1997-98 COSTS: $350,000

CLIENT: All Department Clients

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01100881 TITLE : INFORMATION EXCHANGE
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT : VARIOUS
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 280000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	245456	245456	360000	360000	290769	290769
TOTAL COSTS	245456	245456	360000	360000	290769	290769

New York State Department of Transportation
Transportation Research and Development Bureau

PROJECT: **11–01 ENGINEERING SOILS SURVEY**

SCOPE: This project, in conjunction with the Natural Resources Conservation Services (NRCS), provides field sampling assistance, laboratory analysis, and engineering interpretation of the soil types encountered in a surveyed county. Field sampling of soils will be conducted in the counties where NRCS is surveying. The laboratory analysis and interpretations for these soils is scheduled. Next year the field survey has been cancelled by NRCS. However, funds will be needed to complete some existing laboratory work and investigate the NRCS computerization of the data.

STATUS: Continuing

ESTIMATED 1997–98 COSTS: $5,000

CLIENTS: All Department Units

09/10/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01101881 TITLE : ENGINEERING SOILS SURVEY
SECTION: ADMINISTRATION INVESTIGATOR: WALTON
CLIENT : GEOTECHNICAL ENGINEERING BUREAU
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 5000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	182	182	3000	3000	2423	2423
TOTAL COSTS	182	182	3000	3000	2423	2423

New York State Department of Transportation
Transportation Research and Development Bureau

PROJECT: **11-02 INFORMATION EXCHANGE — LIBRARY OPERATIONS**

SCOPE: This project covers activities performed by the Bureau's library staff which include accessing current technical information through the maintenance of a collection of technical literature and conducting inquiries to various technical information services, State universities and State libraries to obtain research source material. The following is a summary of some activities performed under this project during SFY 1996–97:

• Reference Questions	1,078
• Inter-Library Loans	640
• New Acquisitions	1,376
• Literature Searches	353
• Circulation	1,747

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $100,000

CLIENT: All Department Units

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01102881 TITLE : INFO EX-LIBRARY OPERATIONS
SECTION: ADMINISTRATION INVESTIGATOR: ADMINISTRATION
CLIENT :
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 95000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	76387	76387	100000	100000	80769	80769
TOTAL COSTS	76387	76387	100000	100000	80769	80769

New York State Department of Transportation
Transportation Research and Development Bureau

PROJECT: **11-03 INFORMATION EXCHANGE — NEWSLETTERS**

SCOPE: The Quarterly R&D Digest published since 1977 changed to Transportation R&D News with its 61st issue in January 1995, reflecting this Bureau's own new name. It continues to serve as a forum for announcement of new publications and new research studies, with occasional feature articles concerning the research program, and is distributed throughout NYSDOT, to FHWA, and to other states. This year, a new order form was designed for insertion in each issue, simplifying the ordering of new publications by interested readers. Four issues were published during this program period.

In addition, the TNT technology transfer newsletter continued quarterly publication and distribution to all NYSDOT employees who have engineering titles. Its contents cover a broad range of technological innovation throughout the transportation world, with the intent of encouraging readers to seek further information and possible application within New York.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $15,000

CLIENT: All Department Units

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01103881 TITLE : INFO EX - NEWSLETTERS
SECTION: ADMINISTRATION INVESTIGATOR: ADMINISTRATION
CLIENT :
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 30000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	11086	11086	25000	25000	20192	20192
TOTAL COSTS	11086	11086	25000	25000	20192	20192

New York State Department of Transportation
Transportation Research and Development Bureau

PROJECT: **11-04 INFORMATION EXCHANGE — LIBRARY SUPPORT**

SCOPE: This project covers the acquisition of research resource material such as books, reports, periodicals, conference proceedings, etc. for the library.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $20,000

CLIENT: All Department Units

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01104881 TITLE : INFO EX - LIBRARY SUPPORT
SECTION: ADMINISTRATION INVESTIGATOR: ADMINISTRATION
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 23000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	12150	12150	23000	23000	18577	18577
TOTAL COSTS	12150	12150	23000	23000	18577	18577

PROJECT: 12-0 CONSULTATION

SCOPE: This project provides a means of rendering advice and/or services in various areas of engineering technology and research methodology, such as design of experiments, instrumentation, and statistical analysis, for which Bureau staff is uniquely qualified or equipped. Some activities conducted under this project during the program period included:

1. On September 11, 1996, Robert Valenti, Ruijia Mu, Mohamed Elkordy, and Sreenivas Alampalli met with Larry Brown of the Facilities Design Division to discuss structural integrity of guide-rail systems using the NARD program. Ruijia Mu and Jyotirmay Lall performed preliminary calculations to estimate system connection strength and reviewed program "NARD" for possible use in the project. Sreenivas Alampalli reviewed pertinent literature and investigated the need for crash testing on the "strong-post" guide-rail system, which is currently used by the Department on national highways.

2. On January 22, 1997, Sreenivas Alampalli gave his comments on the Chapter 11 draft of the Design Manual "Design Guidance for Traffic Signal Pole Design," to Terry Hale of the Design Quality Assurance Bureau.

3. Julian Bendaña reviewed the suggested modifications to the research plan for NCHRP Project 1-35 "Guidelines for Developing Pavement Performance Trends" and made recommendations to Transportation Research Board.

4. On December 11, 1996, Osman Hag-Elsafi of TR&DB met with Joe Savoie, Al Kelly, and Rich Casali of the Structures Division to discuss Fort Miller's prefabricated "Effideck" deck system and the proposed test plan for the system. Osman Hag-Elsafi and Sreenivas Alampalli reviewed the test plan and prepared comments, which were included in Structures Division's review report to the Fort Miller Company.

5. The thermal mapping work has been advertised in the "Contract Reporter" using Lockheed Martin and Vaisala Corporations as two separate contractors. The advertisements did not produce any responses from vendors. The final contracts are being prepared by the Department, Lockheed Martin, and Vaisala. They are currently being reviewed by Joe Doherty. It is anticipated that the Department will contract out with the two firms to have the work done this winter. The results will be analyzed this summer and evaluated for use next winter.

   Charlie Vieni, the Resident Engineer in Columbia County expressed an interest in exploring thermal mapping as part of his snow and ice removal process. As part of this project, we will prepare a structure for the testing of thermal mapping in the snow plows as they react to freezing

road surface conditions. A meeting is scheduled for January 30, 1997, in Columbia County to observe current practices. Mike Loftus of the New York State Thruway Authority will be attending the meeting to learn about thermal mapping and RWIS. Steve Emerick of the Geotechnical Engineering Bureau will also be in attendance to determine if the information being collected will benefit the Geotechnical Engineering.

6. Wes Yang and Makbul Hossain revised the draft Asphalt Concrete Pavement Specification for the Pavement Smoothness/Rideability Group, Asphalt Paving Task Force. Final draft was forwarded to Tim Timbrock, Group Chairman, Region 6, for implementation.

7. Peter Bajorski developed a spreadsheet for the calculation of estimates of local highway finance data. This spreadsheet will allow the Data Services Bureau staff to do the calculations necessary for filing FHWA Form 536 every time they have a new sample of data.

8. Deniz Sandhu received a request from the Structures Division to develop a simple procedure for EICs to implement the sampling plans for anchor bolt acceptance testing.

9. Osman Hag-Elsafi and Sreenivas Alampalli reviewed a revised draft final report prepared by Amman and Whitney on the Queens Boulevard Bridge inspection and testing program. Although the revised report addressed most of the comments in an earlier review, some issues were not satisfactorily addressed. A letter indicating those issues of disagreement was forwarded to Amman and Whitney.

10. Osman Hag-Elsafi and Sreenivas Alampalli met with Joseph Savoie and Allen Kelly of Structures Division to discuss the report prepared by the Aluminum Association on rehabilitation of the two aluminum bridges in Long Island. Osman Hag-Elsafi reviewed reports including analysis procedures and full-scale testing of bridges of similar structures to those in Long Island.

11. Julian Bendaña reviewed and made recommendations to "Preliminary Drawings of Details for Reinforced Concrete Pavement for Bus Stops." These drawings include proposed changes to NYCDOT's current standard details of construction for Reinforced Concrete Pavements for Bus Stops. Comments were provided to the Materials Bureau. P. J. Bellair of the Design Quality Assurance Bureau requested this for review.

12. Julian Bendaña reviewed a report titled "Analysis of NYSDOT Plain Concrete Pavement, Route 9A Reconstruction" conducted by Mueser Rutledge Consulting Engineers dated February 21, 1997. The report had several flaws in the analysis, among them: erroneous modeling of thermal gradients, and erroneous modeling of axle loads. After Dr. Bendaña's comments, a revised report was submitted to NYSDOT on March 5, 1997. This report did not answer the problems associated with

the original report and included a fundamental flaw in the sensitivity analysis, that is, by increasing the slab length, stresses where shown to decrease. This contradicted the behavior of jointed concrete pavements for this range of slab length.

13. Sreenivas Alampalli will serve as a member of the "Bridge Performance Committee." The committee has representatives from the following divisions: Technical Services, Structures, Construction, and Transportation Maintenance. This committee will address common bridge problems which affect bridge life. A kick-off meeting of the committee was scheduled to begin March 11, 1997.

14. On February 6, 1997, Dr. Julian Bendaña attended a meeting at the Route 9A office in New York City. The objective of this meeting was to discuss how utility-structure details recommended by the Technical Services Division could be implemented on the Route 9A project.

15. Julian Bendaña prepared comments to Mueser Rutledge Consulting Engineers' memorandum dated January 31 ,1997 concerning the revised analysis of NYSDOT 275 mm PJC, Route 9A reconstruction.

16. Julian Bendaña conducted a shear key design check for Type B "Longitudinal Construction Joint" -- a joint with a keyway but without tiebars. Rick Morgan assisted Julian in drawing details of keyway joints.

17. Julian Bendaña and Materials Bureau personnel reviewed a report titled "The Effects of Utility Structures on Pavement Performance Along Route 9A Reconstruction Project" by ERES Consultants, Inc. and provided a detailed description of works that need to be done by ERES to Timothy D. Steinhiber, Project Manager, Route 9A Reconstruction Project, Bechtel Infrastructure Corporation.

18. On April 7, 1997, Sreenivas Alampalli attended a kick-off meeting to discuss "Williamsburg Bridge Orthotropic Deck Laboratory Testing Project - Phase II." The meeting was held at Lehigh University, FHWA, and Steinman. The discussion focused on fabrication of a test panel and instrumentation plans for laboratory and field testing.

19. On November 8, 1996, Robert Perry, Sreenivas Alampalli, and Osman Hag-Elsafi of the Transportation Research and Development Bureau, Joseph Savoie and Allen Kelly of the Structures Division, personnel from Region 10, a representative from FHWA, and a team from the Aluminum Association visited one of two structurally-deficient aluminum bridges in Region 10 for condition assessment. In a meeting held after the visit, it was decided that the Aluminum Association will prepare a report including possible rehabilitation and maintenance procedures for Department review. The Transportation Research and Development Bureau will serve as a liaison in coordinating these efforts. Sreenivas Alampalli obtained a copy of a Master's thesis by Bernard Evans titled "Stress Analysis of Shear Panels in Design of a Semi-Moncoque Aluminum Highway Bridge", which includes analysis procedures related to the subject bridge.

On April 29, 1997, Sreenivas Alampalli and Osman Hag-Elsafi visited the two aluminum bridges in Long Island and met H. Chungsing, the Regional Bridge Maintenance Engineer. TR&DB, the Structures Division, and the Aluminum Association are investigating rehabilitation of these two bridges.

20. Julian Bendaña continued working on the Route 9A project in various aspects of PCC pavement design and analysis.

21. On June 10, Deniz Sandhu attended a planning meeting in Region 4 with the TMD personnel and the Regional Director. The snow and ice management research activities for next winter were discussed and prioritized.

22. The Structures Division contacted Sreenivas Alampalli, requesting testing of prestressed concrete beams to be removed early next year from bridge No. 5, which carries the Northway over Kayaderosseas Creek. Sreenivas Alampalli contacted Turner Fairbanks Highway Research Center (TFHRC) for cooperative efforts. TFHRC will pay for shipping the beams to their testing facilities in McLean, Virginia, perform the testing, and provide test results to TR&DB. Sreenivas Alampalli and Jyotirmay Lall prepared specifications for removing the beams from the bridge. The specifications will be included in the construction contract documents.

23. Osman Hag-Elsafi and Sreenivas Alampalli are preparing a preliminary draft report proposing a procedure for rehabilitation of the two aluminum bridges in Long Island.

24. Julian Bendaña reviewed various mechanistic analyses conducted by the EREST consultant for the 9A project. A finite element program was used to analyze effects of several variables on slab transverse cracking and corner-break mechanisms caused by repeated application of traffic and environmental stresses to pavements at both midsections and corners. The variables considered were: a) slab length, b) modulus of subgrade support, c) modulus of rupture, d) widened outer land/tier shoulder effect, e) magnitude and location of axle load, f) temperature gradients, and g) location of utility structures. The outcome from this study was a new joint layout that reduces the critical stresses to achieve long-term performance.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $500,000

CLIENT: All Department Units

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01200881 TITLE : CONSULTATION
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT : VARIOUS
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 500000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	376171	376171	500000	500000	403846	403846
TOTAL COSTS	376171	376171	500000	500000	403846	403846

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01222881 TITLE : FHWA-LTPP
SECTION: MATER./PAVING INVESTIGATOR: DR. YANG
CLIENT : N/A
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 200000

PROJECT INITIATION DATE : 07/07/1988
STUDY PROPOSAL DUE : 01/03/1989
STUDY PROPOSAL COMPLETED: 07/12/1988
STUDY PROPOSAL APPROVED : 07/12/1988
ORIGINAL COMPLETION DATE: 03/31/1993
REVISED COMPLETION DATE : 09/30/2003
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	45184	302159	60000	789000	48462	417462
TOTAL COSTS	45184	302159	60000	789000	48462	417462

OBJECTIVE: To provide the staffing, expertise, and all necessary technical assistance for FHWA-LTPP related activities (e.g., GPS/SPS, Seasonal Monitoring Program and WIM, etc.) in New York State.

PROGRESS: All sites were marked and striped, sign missing on Rt 3, St. Lawrence Co. was replaced. Results of tests on AC samples from SPS-8 sites were sent to ITX-Stanley, Federal consultant for LTPP sites in the No. Atlantic Region. Overlay information for GPS sites on Rt 3, St. Lawrence Co., and Rt 4, Washington Co. were summarized.

SIX-MONTH PLAN: Continue to coordinate activities between the Department and FHWA's contractor. Transmit inventory data on all GPS and the SPS-8 sections to FHWA'S contractor as it becomes available.

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01228881 TITLE : ERTAP CONSULTATION
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT :
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 7500

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	9915	9915	20000	20000	16154	16154
TOTAL COSTS	9915	9915	20000	20000	16154	16154

PROJECT: 12-38 CONSULTATION (STATISTICS)

SCOPE: This project covers statistical services provided by the Bureau's statistician to various clients throughout the Department. Some of the analyses provided during the program period include:

1. Piotr Bajorski completed the analysis of the data provided by the Structures Division on 93 bridges, comparing the federal and New York State bridge rating systems. Significant bias, indicating higher federal rates than the converted state rates, was discovered. In a meeting with the client, Tom Moon of the Structures Division, it was decided that a more reliable method for converting the state rating to the federal rating would be developed. This will require additional rating data from several hundred bridges. These bridges will need to be rated according to both state and federal systems. The data is planned to be collected this year.

2. Deniz Sandhu met with Larry Brown of the Design Quality Assurance Bureau to discuss a statistical methodology developed by DQAB to establish criteria for replacement of weak post corrugated guiderail and barriers on non-freeway 3-R projects. She also met with representatives from the Office of Legal Affairs to discuss the legal implications of the Department's proposed guiderail policy. DQAB's analysis is being reviewed and recommendations are being prepared.

3. Piotr Bajorski continued to work with Tom Moon of the Structures Division on developing a reliable procedure to obtain the federal bridge ratings from the state bridge ratings. He prepared a separate sampling procedure for Region 10 bridges, based on the specific types of bridges in that region.

4. Upon the request of Ed Fahrenkopf, TR&DB staff have been working with the Transportation Maintenance Division in developing and administering a survey on night visibility of traffic signs. The contents of the survey was finalized in meetings held with representatives from the Transportation Maintenance and TPHSTE Divisions. Colin Campbell coordinated the distribution of 2500 survey forms on the State Campus and at the Empire State Plaza on May 29 and 30. Participants were asked to return the completed forms through interagency mail. Colin has also been working with AARP's completed forms through interagency mail. Colin has also been working with AARP's "Alive at 55" driving program instructors and local senior citizen's groups to secure participation of older drivers in the survey. An additional 600 forms will be distributed through these groups. Tabulation and analysis of the survey results will begin in June.

5. Piotr Bajorski continued to work with Tom Moon of the Structures Division on developing a reliable procedure to obtain the federal bridge ratings from the state bridge ratings. He prepared a separate sampling procedures for Region 10 bridges, based on the specific types of bridges in that region.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $100,000

CLIENT: All Department Units

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01238881 TITLE : CONSULTATION (STATISTICS)
SECTION: TECH/TRAN INVESTIGATOR: DR. BAJORSKI
CLIENT : ALL SECTIONS
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 95000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	79022	79022	100000	100000	80769	80769
TOTAL COSTS	79022	79022	100000	100000	80769	80769

09/09/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01248881 TITLE : SHRP SUPERPAVE
SECTION: MATER./PAVING INVESTIGATOR: DR. HOSSAIN
CLIENT : MATERIALS BUREAU
CONTRACTOR :

PROJECT INITIATION DATE : 07/18/1994
STUDY PROPOSAL DUE : 01/14/1995
STUDY PROPOSAL COMPLETED: 07/18/1994
STUDY PROPOSAL APPROVED : 07/18/1994
ORIGINAL COMPLETION DATE: 09/30/1999
REVISED COMPLETION DATE : 09/30/1999
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 250000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	14100	147386	35000	250000	28269	178269
TOTAL COSTS	14100	147386	35000	250000	28269	178269

OBJECTIVE: To provide the staffing, the expertise and the necessary technical assistance to coordinate such Superpave-related activities as Operational Goal #94-5, testing and mix design plans, and QA/QC Program, etc.

PROGRESS: Performed field survey of 1997 Superpave jobs.

SIX-MONTH PLAN: Continue providing technical assistance to Superpave projects, and continue performing FWD testing for structural evaluation of pavements related to Superpave jobs as a part of Superpave performance evaluation.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01249881 TITLE : FALLING WEIGHT DEFLECTOMETER
SECTION: MATER./PAVING INVESTIGATOR: DR. YANG/DR. HOSSAIN
CLIENT : SOIL MECHANICS BUREAU
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 150000

PROJECT INITIATION DATE : 09/30/1994
STUDY PROPOSAL DUE : 03/29/1995
STUDY PROPOSAL COMPLETED: 10/01/1994
STUDY PROPOSAL APPROVED : 10/01/1994
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/2000
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	22698	181197	50000	370000	40385	215385
TOTAL COSTS	22698	181197	50000	370000	40385	215385

OBJECTIVE: To provide the staffing, expertise, and all necessary technical assistance to coordinate the following FWD-related activities:

1. Perform FWD testing to support Project R-224-01, "Development of Overlay Design Procedure."
2. Perform FWD testing to evaluate field performance of superpave jobs, Project R-012-48."

PROGRESS: 1997 FWD tests completed.

SIX-MONTH PLAN: Begin 1998 FWD tests, and begin 1997 FWD analysis.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R01252881
SECTION: TECH/TRAN

TITLE : GEOSYNTHETIC SLOPES & RETAIN WALLS
INVESTIGATOR: DR. MATHIOUDAKIS
CLIENT : GEOTECHNICAL ENGINEERING BUREAU
CONTRACTOR :

PROJECT INITIATION DATE : 11/22/1994
STUDY PROPOSAL DUE : 05/21/1995
STUDY PROPOSAL COMPLETED: 11/22/1994
STUDY PROPOSAL APPROVED : 11/22/1994
ORIGINAL COMPLETION DATE: 03/31/1996
REVISED COMPLETION DATE : 03/31/1998
REVISION NUMBER : 2

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 45000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	495	10171	20000	45000	16154	21154
TOTAL COSTS	495	10171	20000	45000	16154	21154

OBJECTIVE: To develop guidelines for design and acceptance of geosynthetics installed in slopes and retaining walls.

PROGRESS: NCHRP reports, FHWA design guidelines, and national standards issued in June of 1996 were reviewed, and a literature review conducted.

SIX-MONTH PLAN: We will be working on modifying these standards so that they conform to our current specifications.

09/11/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01257881 TITLE : LOSS OF ENTRAINED AIR HRD CONCRETE
SECTION: MATER./PAVING INVESTIGATOR: CHOU
CLIENT : MATERIALS BUREAU
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 50000

PROJECT INITIATION DATE : 05/19/1995
STUDY PROPOSAL DUE : 11/15/1995
STUDY PROPOSAL COMPLETED: 05/19/1995
STUDY PROPOSAL APPROVED : 05/19/1995
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1998
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	40903	90151	60000	150000	48462	78462
TOTAL COSTS	40903	90151	60000	150000	48462	78462

OBJECTIVE: To develop a user-friendly manual to assist concrete mix designers and concrete manufacturers in evaluating, screening and selecting effective and efficient air entraining agents in the present U.S. market, and in determining under what conditions prescribed air content and spacing factors are lost in hardened concrete (water/cement ratio, aggregate, vibration, mix action, admixtures, slump, temperature, etc.) and how the problems can be avoided or solved.

PROGRESS: (1) The report, "Proposed Laboratory Test Method for Preliminary Evaluating, Screening, and Preliminary Selecting Air Entraining Agents" has been reviewed by the Materials Bureau, and has been revised. (2) The laboratory experiment for evaluating the air entraining agents of Daravair M and Micro Air by the proposed test method is underway. This experiment will evaluate whether or not the proposed new test method is feasible and practicable. (3) Investigate further, by literature search, on how factors such as slump, vibration, mixing action, air entraining agents, etc., affect the phenomena of air void characteristic change in hardened concrete.

SIX-MONTH PLAN: (1) Complete the laboratory experiment for evaluating the proposed new air agent test method, (2) Complete the draft report, "Loss of Entrained Air In Hardened Concrete," which includes a user-friendly manual to assist concrete mix designers and manufacturers in making durable concrete. factors such as slump, vibration, water/cement ratio, mixing action, temperature, and air-entraining agents and other admixtures (such as set-controlling chemicals, accelerating admixtures, retarding admixtures, mineral admixtures, water-reducing surfactant, and superplasticizers) affect the air-void system in concrete and the stability of the air-void system. This manual also will provide information on the compatibility among the different admixtures for controlling the air-void system in concrete based on current chemistry research. Finally, a useful guideline will be developed to assist concrete mix designers and manufacturers for controlling the air-void system in concrete. (3) Conduct laboratory experiments for verifying hypotheses and conclusions from existing research papers.

PROJECT: R01260881 TITLE : FLD INVEST SVS LIFE CORR STEEL CULV
SECTION: TECH/TRAN INVESTIGATOR: DR. SANDHU
CLIENT : DESIGN DIVISION
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 35000

PROJECT INITIATION DATE : 03/13/1996
STUDY PROPOSAL DUE : 09/09/1996
STUDY PROPOSAL COMPLETED: 03/13/1996
STUDY PROPOSAL APPROVED : 03/13/1996
ORIGINAL COMPLETION DATE: 08/01/1996
REVISED COMPLETION DATE : 03/31/1998
REVISION NUMBER : 3

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	19895	44286	20000	65000	16154	41154
TOTAL COSTS	19895	44286	20000	65000	16154	41154

OBJECTIVE: The goal of this study is to verify the assumptions made for metal loss rates in the design of corrugated steel culverts. A larger sample of the culverts included in the original study was loacated and visited to measure remaining metal thickness and observe their field performance. The study concentrated on Zone 2 culverts since the statistical analysis suggested a larger discrepancy in the metal-loss rates for this geographical area.

PROGRESS: Culverts were identified, located, inspected and measured for remaining metal thickness as of December 1996. Statistical analysis of field data is in progress.

SIX-MONTH PLAN: Analyze data and report the results.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01263881 TITLE : CONST/EVAL NOISE BARRIER W/RECYCLED
SECTION: STRUCTURES INVESTIGATOR: DR. HAG-ELSAFI
CLIENT : VARIOUS
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 50000

PROJECT INITIATION DATE : 10/17/1996
STUDY PROPOSAL DUE : 04/15/1997
STUDY PROPOSAL COMPLETED: 02/14/1997
STUDY PROPOSAL APPROVED : 02/14/1997
ORIGINAL COMPLETION DATE: 03/31/1998
REVISED COMPLETION DATE : 03/31/1998
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	4087	4087	42000	50000	33923	33923
TOTAL COSTS	4087	4087	42000	50000	33923	33923

OBJECTIVE: 1) Construct and monitor a noise wall at a selected Long Island site, recording viable construction techniques and costs, evaluating acoustic effectiveness, and assessing public acceptance; 2) monitor most important recycled plastic material properties for changes due to exposure to field consitions; and 3) evaluate the testing experience, and modify the proposed standards and specifications in Project 12-44 as appropriate.

PROGRESS: Construction of the noise wall is scheduled for this fall or early summer.

SIX-MONTH OBJECTIVE: Complete the project, accomplishing the stated objectives.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01264881 TITLE : DEV SPECS RECYCLED PLASTIC HY APP
SECTION: STRUCTURES INVESTIGATOR: DR. HAG-ELSAFI
CLIENT : EAB, DQAB, MATERIALS, STRUCTURES
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 50000

PROJECT INITIATION DATE : 04/24/1997
STUDY PROPOSAL DUE : 10/21/1997
STUDY PROPOSAL COMPLETED: 04/24/1997
STUDY PROPOSAL APPROVED : 04/24/1997
ORIGINAL COMPLETION DATE: 06/30/1998
REVISED COMPLETION DATE : 06/30/1998
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	50000	50000	40385	40385
TOTAL COSTS	0	0	50000	50000	40385	40385

OBJECTIVE: Identify potential highway applications for recycled plastics and develop specifications for materials to be used in those applications. This objective can be accomplished in two phases: 1) identification of potential highway applications, and 2) depending on the findings, development of additional specifications.

PROGRESS: Project initiated April 1997.

SIX-MONTH PLANS: Complete the project, accomplishing the stated objectives, and prepare a draft report for the client's review.

PROJECT: R01265881 TITLE : NDT METH EST PAV LAYER THICKNESS
SECTION: MATER./PAVING INVESTIGATOR: DR. HOSSAIN
CLIENT : GEOTECHNICAL ENGINEERING BUREAU
CONTRACTOR :

PROJECT INITIATION DATE : 05/19/1997
STUDY PROPOSAL DUE : 11/15/1997
STUDY PROPOSAL COMPLETED: 05/19/1997
STUDY PROPOSAL APPROVED : 05/19/1997
ORIGINAL COMPLETION DATE: 09/30/1999
REVISED COMPLETION DATE : 09/30/1999
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 40000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	573	573	20000	40000	16154	16154
TOTAL COSTS	573	573	20000	40000	16154	16154

OBJECTIVE: (1) Transfer a main-frame-based SASW Fortran program to a pc-based program, and (2) Perform SASW testing to determine pavement layer thickness.

PROGRESS: Completed review of SASW software needs. Selected IMSL Routines necessary for program.

SIX-MONTH-PLAN: Purchase of IMSL Routine Package and installation in the SASW Analysis Program.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01266881 TITLE : QTLY PERF MECH ITS EQUIP & SVS
SECTION: TECH/TRAN INVESTIGATOR: DR. ELRAHMAN
CLIENT : TRAFFIC ENG & SAFETY DIVISION
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 45000

PROJECT INITIATION DATE : 05/20/1997
STUDY PROPOSAL DUE : 11/16/1997
STUDY PROPOSAL COMPLETED: 05/20/1997
STUDY PROPOSAL APPROVED : 05/20/1997
ORIGINAL COMPLETION DATE: 06/30/1998
REVISED COMPLETION DATE : 06/30/1999
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	10000	45000	8077	8077
TOTAL COSTS	0	0	10000	45000	8077	8077

OBJECTIVE: The goals are to explore methods of improving the ITS procurement process, to ensure that quality and performance factors are properly addressed in contracting procedures. The objectives are to: 1) examine past/existing Department ITS procurement as case studies, and contracting mechanisms (such as capital projects and service contracts) will be investigated; 2) gather information on national and international efforts to improve ITS contracting processes. High-technology agencies' processes will be examined; 3) recommend specific improvements for NYSDOT ITS procurement; and, 4) develop sample procurement documents incorporating improved contracting items.

PROGRESS: Project initiated May 1997.

SIX-MONTH-PLAN: Perform literature search and review; examine existing Department ITS procurement mechanisms; survey national efforts to improve ITS contracting mechanisms; and survey other high-technology areas. Identify shortcomings of existing contracting for ITS services; and identify contracting methods that have proved successful in adding quality criteria to ITS contracting.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01267881 TITLE : PEER REVIEW
SECTION: ADMINISTRATION INVESTIGATOR: DR. PERRY
CLIENT : FHWA
CONTRACTOR :

PROJECT INITIATION DATE : 09/03/1997
STUDY PROPOSAL DUE : 03/02/1998
STUDY PROPOSAL COMPLETED: 09/03/1997
STUDY PROPOSAL APPROVED : 09/03/1997
ORIGINAL COMPLETION DATE: 10/01/1998
REVISED COMPLETION DATE : 10/01/1998
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 10000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	10000	10000	8077	8077
TOTAL COSTS	0	0	10000	10000	8077	8077

OBJECTIVE: TO COMPLY WITH FHWA RULES AND REGULATIONS: 23CRF PART 420.207(b).

PROJECT: 13-0 IMPLEMENTATION

SCOPE: Activities conducted under this project are directed at cooperating with Department staff in implementing the results of research conducted by the Bureau and other agencies. In the case of in-house research, this project permits "implementation follow-through" after the research projects are completed and terminated.

Activities will be undertaken primarily by Bureau staff and members of appropriate Department technical working groups who will provide guidance on packaging, planning, promotion, and delivery strategies needed to assess new technologies or products. Bureau staff are available to assist end-users on both the evaluation and initiation of these new products and technologies, and provide a feedback loop for positive communication of findings.

1. On September 23, 1996, Osman Hag-Elsafi and David Elwell of the Transportation Research and Development Bureau, and Orlando Picozzi of the Materials Bureau, met with Kent Edwards, Pete Burke, Robb Smith, and Pat Martin of Region 10 to discuss various issues related to building a test noise barrier using recycled plastic in the region. The wall design and specifications will be based on Project 12-44 "Specifications for Traffic Noise Barriers Using Recycled Plastic." Standards and specifications of the test barrier must be completed by December 1, 1996 to be included in the PS&E package for PIN 0228.60.

2. SHRP's contractors have started delivering showcase workshops in the FHWA Region 1 geographic area. Joe Doherty of the Transportation Maintenance Division attended the Snow and Ice Workshop at FHWA's expense, sponsored by Connecticut. NYSDOT continues to explore the possibility of hosting two workshops, "Concrete Durability" and High-Performance Concrete."

3. Osman Hag-Elsafi and Sreenivas Alampalli prepared a draft report on the rehabilitation of aluminum bridges in Long Island. They met with Joseph Savoie and Al Kelly of the Structures Division to discuss the reports contents. They also went to Long Island on June 12 ,1997 to visit the aluminum bridges and to meet Chung Sing Hsei, Regional Maintenance Engineer to discuss the proposed rehabilitation procedure.

4. Makbul Hossain has been selected as a member of the HITEC evaluation panel for the ICE BAN anti/deicing product. ICE BAN is the concentrated liquid residue of the fermentation and distillation of alcohols and the processing of other agricultural products. Testing of this substance has shown its effectiveness in melting snow and ice faster and at lower temperatures than common rock salt. It is reported that ICE BAN is biologically and environmentally inert, non-corrosive, and has no adverse effects on the roads, infrastructure, and vehicles.

5. On November 6, 1996, Peter Bajorski, Makbul Hossain, and Deniz Sandhu attended the Pengwyn Zero-Velocity Spreader demonstration at the Waterford Equipment Management Shop. The zero-velocity technology reduces the bouncing of deicing materials (hence reduces waste) and enables spreading at higher speeds. The Department will be evaluating the zero-velocity technology in snow and ice operations this winter. Peter Bajorski prepared a preliminary work-plan for the evaluation of this technology in reducing deicer usage in clearing two-lane highways. Region 4 is in the process of identifying a suitable site for this evaluation.

   On November 15, 1996, Peter Bajorski, Maggie Cusack, and Deniz Sandhu of the Transportation Research and Development Bureau, and Joe Doherty of the Transportation Maintenance Division met with Monroe East residency personnel in Region 4 to discuss snow and ice technology evaluation projects planned for this winter. General consensus on the work plans for evaluation of fine-salt, MAGIC, and zero-velocity spreaders were reached. The region is preparing the implementation plan for these evaluations.

6. On November 29, 1996, Peter Bajorski got in touch with the Resident Engineer, Myron Shirley in Oswego County to discuss the evaluation of underbody plows. These plows are believed to be effective in preventing and removing hard pack snow and reducing wheel ruts in heavy snow. Preliminary evaluations in Oswego were scheduled to start later this winter when the equipment would be available.

7. On November 7, 1996, Edward Bikowitz and Deniz Sandhu met with representatives from the Transportation Maintenance and Equipment Management Divisions to finalize data collection procedures for the snowplow lighting study. On November 14, an information and training session was conducted for the operators that will participate in the study in the Route 155 sub-residency in Colonie. Training sessions in the other three participating residencies were scheduled for the first week of December, 1996.

8. Osman Hag-Elsafi and David Elwell prepared tables for materials requirements and estimated costs for the recycled plastic test wall to be built in Region 10, and forwarded copies to the region.

9. Osman Hag-Elsafi and David Elwell of TR&DB, and Orlando Picozzi of the Materials Bureau met with personnel from Region 10 to amend the specifications and plans for the test noise barrier using recycled plastic to be built in Long Island. Osman Hag-Elsafi and David Elwell completed the amendments and sent revised specifications and plans to Region 10.

10. The Department's SHRP Implementation Committee, chaired by Paul Mack met on February 13, 1997. Robert Valenti developed the draft minutes from the meeting which will be distributed after review.

11. Ruijia Mu discussed implementation of acceptance criteria for cast iron articles with Pratip Lahiri of the Design Quality Assurance Bureau.

12. Osman Hag-Elsafi and Sreenivas Alampalli attended the Design-Construction meeting on the LI Expressway HOV Lanes construction project. This project includes experimental noise barriers using recycled plastic lumber. The contractor is expected to start the project in August 1997. They are talking with the project engineer, and investigating the possibilities of building these walls as soon as possible, after the project inception.

13. Research Project "Development of Standards for Noise Barriers Using Recycled Plastic Lumber" was selected by FHWA for a Special Concept Award under the "noise abatement" category during this year's Earth Day activities. This project was executed by the Transportation Research and Development Bureau researchers in cooperation with Landscape Architecture Bureau, Materials Bureau, Environmental Analysis Bureau, Design Quality Assurance Bureau, and the Structures Division. This award was presented in recognition of these Bureaus' efforts in developing design standards for noise barriers using recycled plastic. These standards represent an alternative solution to the environmental problems of noise pollution and plastic waste.

14. Special Report 126 "Wind Loads on Untethered-Span-Wire Traffic-Signal Poles" by Sreenivas Alampalli has been published. This report documents the studies conducted on design procedures used for estimating loads on untethered spanwire traffic signal poles. Richard Stemple of the Design Quality Assurance Bureau and G. Ramos of Traffic Planning Division contacted Dr . Alampalli regarding implementation of the results, and a meeting is scheduled for next month to discuss the implementation details.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $15,000

CLIENT: All Department Units

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01300881 TITLE : IMPLEMENTATION
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT : VARIOUS
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 15000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	6772	6772	15000	15000	12115	12115
TOTAL COSTS	6772	6772	15000	15000	12115	12115

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01310881 TITLE : IMPLEMENTATION OF GLASGRID
SECTION: TECH/TRAN INVESTIGATOR: VALENTI
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 40000

PROJECT INITIATION DATE : 10/01/1992
STUDY PROPOSAL DUE : 03/30/1993
STUDY PROPOSAL COMPLETED: 10/01/1992
STUDY PROPOSAL APPROVED : 10/01/1992
ORIGINAL COMPLETION DATE: 03/31/1995
REVISED COMPLETION DATE : 03/31/1998
REVISION NUMBER : 5

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	2792	54304	2000	60000	1615	56615
TOTAL COSTS	2792	54304	2000	60000	1615	56615

OBJECTIVE: Evaluate Glasgrid's ability to retard reflective cracking and compare its performance and cost-effectiveness to sections with 1" thicker overlays.

PROGRESS: Crack surveys were conducted in April, August, December of 1995, June 1996, and June 1997.

SIX-MONTH PLAN: Complete evaluation of cores from the 1997 survey, and publish final report.

New York State Department of Transportation
Transportation Research and Development Bureau

PROJECT: **13-14 IMPLEMENTATION OF SHRP PRODUCTS**

SCOPE: This project covers all activities performed by the Bureau, Department Implementation Committees, and end-users for evaluation and implementation of SHRP products. Scheduling, field evaluation, and final reporting activities for all SHRP products will be reported under this function.

Activities conducted under this project during the program year included:

1. The continued evaluation of 48 SHRP products, including 9 Superpave ™ products.

2. The fourth SHRP Implementation progress report on the evaluation of SHRP products was published in September 1997.

3. All activities related to NYSDOT lead state responsibilities for Superpave™ and Anti-Icing/RWIS.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $30,000

CLIENT: All Department Units

09/11/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01314881 TITLE : IMPLEMENTATION -SHRP PRODUCTS
SECTION: TECH/TRAN INVESTIGATOR: VALENTI
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 50000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	14589	14589	40000	40000	32308	32308
TOTAL COSTS	14589	14589	40000	40000	32308	32308

OBJECTIVE: Ensure the timely evaluation and implementation of SHRP products.

PROGRESS: Conducted activities as lead state for RWIS/Anti-Icing, and coordinating lead state for Superpave.

SIX-MONTH PLAN: Continue lead state activities. Continue evaluation of products and incrementally report findings.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R01319881 TITLE : IMPL SHEAR-KEY PERF PROJ FINDINGS
SECTION: STRUCTURES INVESTIGATOR: DR. ALAMPALLI
CLIENT : STRUCTURES DIVISION
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 45000

PROJECT INITIATION DATE : 05/07/1997
STUDY PROPOSAL DUE : 11/03/1997
STUDY PROPOSAL COMPLETED: 05/07/1997
STUDY PROPOSAL APPROVED : 05/07/1997
ORIGINAL COMPLETION DATE: 12/31/1998
REVISED COMPLETION DATE : 12/31/1998
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	618	618	20000	45000	16154	16154
TOTAL COSTS	618	618	20000	45000	16154	16154

OBJECTIVE: To investigate the effect of increased deck-overlay reinforcement and greater transverse post-tensioning force in reducing shear-key related longitudinal deck cracking on adjacent-prestressed-beam bridges.

PROGRESS: A test plan, of test structures to be built, was prepared.

SIX-MONTH PLAN: Work with the Structures Division in identifying the test structures; monitor the test structures for cost, constructability and serviceability issues associated with recommended changes.

PROJECT: 14-01 LOCAL TECHNOLOGY ASSISTANCE PROGRAM

SCOPE: Cornell University, sponsored by the Department of Transportation and FHWA, has been contracted to provide technical engineering services to local municipal highway personnel. These services are provided through formal instructional classes, direct mailings, conferences, and phone calls.

Activities conducted under this project during the program year included:

1. Cornell published its annual report highlighting its CY 1996 accomplishments. This report was reviewed by Transportation Research and forwarded to FHWA.

2. Upon Transportation Research recommendation, FHWA approved the 1997 work plan for LTAP.

3. In October, 1996, Robert Valenti attended the LTAP Planning Committee Meeting in Syracuse, New York. During this meeting, the agenda for the June, 1997 Annual Highway School was determined.

4. Cornell held its annual Highway Superintendents School on June 2-4, 1997 at Ithaca College, Ithaca, NY. Bob Valenti attended the planning committee meetings held immediately following the school. A quick review of the rating sheets completed by the attendees indicated satisfaction with the agenda and schedule.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $10,000

CLIENT: Municipal highway officials in all local jurisdictions.

09/11/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01401881 TITLE : LOCAL TECHNICAL ASSISTANCE PROGRAM
SECTION: TECH/TRAN INVESTIGATOR: VALENTI
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 10000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	8387	8387	10000	10000	8077	8077
TOTAL COSTS	8387	8387	10000	10000	8077	8077

OBJECTIVE: Provide technical engineering services to local municipal highway personnel through contractual agreement with Cornell University.

PROGRESS: 1998 Annual Highway School planned. 1997 Work Plan approved.

SIX-MONTH PLAN: Provide Technology Transfer activities as necessary. Conduct 1998 School.

SECTION II

Experimentation Program
Type A&B Continuing Studies

09/02/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R22401881 TITLE : DEV OF OVERLAY DESIGN PROCE FOR NYS
SECTION: MATER./PAVING INVESTIGATOR: DR. BENDAÑA
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 5000
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 106000

PROJECT INITIATION DATE : 12/02/1993
STUDY PROPOSAL DUE : 05/31/1994
STUDY PROPOSAL COMPLETED: 07/06/1994
STUDY PROPOSAL APPROVED : 11/08/1994
ORIGINAL COMPLETION DATE: 09/30/1996
REVISED COMPLETION DATE : 09/30/1999
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	45585	181112	80000	300000	64615	188615
TOTAL COSTS	45585	181112	80000	300000	64615	188615

OBJECTIVE: To develop an overlay design procedure suitable for NYS and acceptable to FHWA.

PROGRESS: Continue working with Planning on a procedure to calculate design traffic as a function of highway classification and month of the year. The design traffic is calculated monthly to account for seasonal traffic distribution to model the combined effects of traffic, soil support condition, and temperature distribuiton on pavement stresses, pavement performance. Work has begun on a procedure to estimate Mr & k based on subgrade soil types and seasonal factors for various pavement layers.

SIX-MONTH PLAN: Continue the study according to the work plan.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R22501881 TITLE : HYDR-FRAC TEST APPAR & PROC DET AGG
SECTION: MATER./PAVING INVESTIGATOR: DR. ELKORDY
CLIENT : MATERIALS
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 5000
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 200000

PROJECT INITIATION DATE : 01/24/1994
STUDY PROPOSAL DUE : 07/23/1994
STUDY PROPOSAL COMPLETED: 04/11/1994
STUDY PROPOSAL APPROVED : 06/10/1994
ORIGINAL COMPLETION DATE: 06/30/1996
REVISED COMPLETION DATE : 06/30/1998
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	505	67630	25000	200000	20192	100192
TOTAL COSTS	505	67630	25000	220000	20192	120192

OBJECTIVE: To develop a simplified test chamber. The SHRP device is cumbersome, and would be difficult to assemble/disassemble as required for the test. To develop an automated test procdure, which will decrease the time and labor required to perform the SHRP test. To interpret results from the new test procedure and apparatus. To determine the relationships between the hydraulic-fracture test and aggregate performance. The expected speed of this procedure and a direct correlation of its results with other procedures would be a major improvement.

PROGRESS: The machine has been assembled and tested. Installation of data acquisition boards and the automatic control part have been progressing slowly due to the lack of personnel with expertise in machine control. Plan is unchanged however.

SIX-MONTH PLAN: Coordinate with other states and universities conducting similar tests and allocate personnel with the proper expertise in machine control to install and test the data acquisition boards and complete the automated control.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R22601881 TITLE : PILE LD DIS EARTH PRESS INTE ABUT
SECTION: STRUCTURES INVESTIGATOR: DR. ALAMPALLI
CLIENT : STRUCTURES D&C,GEOTECHNICAL
CONTRACTOR :

PROJECT INITIATION DATE : 06/12/1996
STUDY PROPOSAL DUE : 12/09/1996
STUDY PROPOSAL COMPLETED: 08/31/1996
STUDY PROPOSAL APPROVED : 08/31/1996
ORIGINAL COMPLETION DATE: 12/31/1998
REVISED COMPLETION DATE : 12/31/1998
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 250000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	30025	39897	45000	250000	36346	46346
TOTAL COSTS	30025	39897	45000	250000	36346	46346

OBJECTIVE: To obtain reliable pile load-distribution and earth pressure distribution for structural design, including the effects of factors such as thermal stresses and skew.

PROGRESS: Project initiated June 1996. A study proposal and a survey questionnaire to collect data for existing practices has been prepared. Other states were surveyed for existing practices. Analysis of a candidate bridge is in progress.

SIX-MONTH PLAN: Perform preliminary analysis and design experimentation. Prepare specifications for inclusion in PS&E.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R22701881 TITLE : COMP MATLS HYWY BRIDGE CONST
SECTION: STRUCTURES INVESTIGATOR: DR. ALAMPALLI
CLIENT : SD&C, GEB, MB, CONST, DESIGN, MAINT
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 250000

PROJECT INITIATION DATE : 05/09/1997
STUDY PROPOSAL DUE : 11/05/1997
STUDY PROPOSAL COMPLETED: 05/09/1997
STUDY PROPOSAL APPROVED : 05/09/1997
ORIGINAL COMPLETION DATE: 11/11/1911
REVISED COMPLETION DATE : 11/11/1911
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	1984	1984	3000	250000	2423	2423
TOTAL COSTS	1984	1984	3000	250000	2423	2423

OBJECTIVE: 1) To investigate the feasibility of building an entire bridge, from foundation to appurtenance, using composite materials, and 2) Building a fully composite bridge and then monitoring its in-service performance.

PROGRESS: Draft of the Study Proposal is complete and will be sent for peer review in accordance with the Bureau's Policy & Procedure Manual.

SIX-MONTH PLAN: Establish contact and cooperation with RPI Center for Composite Material Study, and finalize the Study Proposal after receipt of peer review comments.

PROJECT: **15-01 ENGINEERING COMPUTER SYSTEMS SUPPORT**

SCOPE: This project covers all activities performed by the Bureau's Senior Computer Analyst and Computer Coordinator, including planning, management, and maintenance of the hardware and software for the Bureau's computer network and personal computers. This function also includes software development and programming for Engineering Research projects and consultations.

Activities conducted under this project during the program year include:

1. SUN SPARC Station was upgraded from IPX to Ultra and a larger hard drive was installed.
2. SUN operating system, S-plus, Netscape, and Fortran were upgraded.
3. ANSYS 5.3 finite element analysis software was installed.
4. New IBM PC 340's were received and added to Novell Network.
5. Corel Office software was upgraded.
6. GroupWise software was upgraded.
7. Some PC's were upgraded to Win95 operating system.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $75,000

CLIENT: All Department Units

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01501881 TITLE : ENGINEERING COMPUTER SYS SUPPORT
SECTION: TECH/TRAN INVESTIGATOR: DR. SANDHU
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 86000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	60087	60087	75000	75000	60577	60577
TOTAL COSTS	60087	60087	75000	75000	60577	60577

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R02000881 TITLE : CONTRACT RESEARCH
SECTION: ADMINISTRATION INVESTIGATOR: CAMPBELL
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 1301000

PROJECT INITIATION DATE : 10/01/1993
STUDY PROPOSAL DUE : 03/30/1994
STUDY PROPOSAL COMPLETED: 10/01/1993
STUDY PROPOSAL APPROVED : 10/01/1993
ORIGINAL COMPLETION DATE: 09/30/1994
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	1400000	1400000	1130769	1130769
TOTAL COSTS	0	0	1400000	1400000	1130769	1130769

OBJECTIVE: To conduct a program of contract research to address Department needs which can not be handled by the Engineering Research and Development Bureau.

PROGRESS: FIRST-CYCLE PROJECTS: (1) "Improved Visibility for Snow Plow Operations" - project completed 6/30/96. (2) "Cost Effectiveness of Consolidating Government Services" - project completed 10/31/96, (3) "Effective Marketing of Transit and HOV" - contract extension approved, deliverable #5 received, (4) "Review and Development of Life-Cycle Costs and Network Analysis" - deliverable #5 received.

UNIVERSITY RESEARCH CONSORTIUM - Contract signed. First project, CADD Based Design for Blowing Snow Control," is under development.

SIX-MONTH PLAN: (1) All first-cycle projects completed. (2) University Consortium research program expanded and new projects developed.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R02004881 TITLE : EFF MKT OF TRANSIT SYS AND HOV
SECTION: TECH/TRAN INVESTIGATOR: R. SVEJKOVSKY
CLIENT : REG 3 PLANNING & PROGRAM DEV
CONTRACTOR : CORNELL UNIVERSITY

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 127055

PROJECT INITIATION DATE : 04/22/1994
STUDY PROPOSAL DUE : 10/19/1994
STUDY PROPOSAL COMPLETED: 01/27/1995
STUDY PROPOSAL APPROVED : 07/20/1995
ORIGINAL COMPLETION DATE: 03/31/1996
REVISED COMPLETION DATE : 12/31/1997
REVISION NUMBER : 3

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	36785	116803	35000	127050	28269	33269
TOTAL COSTS	36785	116803	35000	127050	28269	33269

OBJECTIVE: To discover and recommend effective outreach programs and policy actions needed to achieve a shift to intermodal transportation systems.

PROGRESS: The third, fourth and fifth deliverables have been received, and a contract extension approved.

SIX-MONTH PLAN: Deliverables 6, 7, and 8 (Final Report) received; project completed.

09/09/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R02005881 TITLE : REV & DEV LIFE-CYCLE COST & NETW
SECTION: TECH/TRAN INVESTIGATOR: J.SHUFON
CLIENT : STRATEGIC PLANNING
CONTRACTOR : CORNELL UNIVERSITY

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 130325

PROJECT INITIATION DATE : 04/22/1994
STUDY PROPOSAL DUE : 10/19/1994
STUDY PROPOSAL COMPLETED: 01/27/1995
STUDY PROPOSAL APPROVED : 07/20/1995
ORIGINAL COMPLETION DATE: 10/31/1996
REVISED COMPLETION DATE : 10/31/1997
REVISION NUMBER : 1

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	12717	50922	57000	130325	46038	51038
TOTAL COSTS	12717	50922	57000	130325	46038	51038

OBJECTIVE: To create a step-by-step manual of procedures and data requirements to perform life-cycle cost and network analysis for New York State Pavements.

PROGRESS: Deliverable #5 has been received.

SIX-MONTH PLAN: Deliverable 6a-d received; project completed.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R02006881 TITLE : LATERAL PROTECT SHORT TERM WK ZONES
SECTION: TECH/TRAN INVESTIGATOR: D. MENCUCCI
CLIENT : SAFETY & HEALTH
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 160000

PROJECT INITIATION DATE : 04/22/1994
STUDY PROPOSAL DUE : 10/19/1994
STUDY PROPOSAL COMPLETED: 11/11/1911
STUDY PROPOSAL APPROVED : 11/11/1911
ORIGINAL COMPLETION DATE: 11/11/1911
REVISED COMPLETION DATE : 11/11/1911
REVISION NUMBER : 0

	ACTUAL EXPENDITURES			PROGRAMMED EXPENDITURES		
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	0	160000	0	0
TOTAL COSTS	0	0	0	160000	0	0

OBJECTIVE: To develop and test a prototype moving lateral intrusion barrier for short-term and moving highway work zones.

PROGRESS: Contract negotiations underway.

SIX-MONTH PLAN: Contract signed, and work begun.

09/09/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R02008881 TITLE : CADD EXPERT SYS BLOWING SNOW CON
SECTION: TECH/TRAN INVESTIGATOR: J. DOHERTY
CLIENT : NYSDOT TRANS MAINTENANCE DIVISION
CONTRACTOR : TRANS INFRASTRUCTURE CONSORTIUM

PROJECT INITIATION DATE : 08/27/1997
STUDY PROPOSAL DUE : 02/23/1998
STUDY PROPOSAL COMPLETED: 11/11/1911
STUDY PROPOSAL APPROVED : 11/11/1911
ORIGINAL COMPLETION DATE: 11/11/1911
REVISED COMPLETION DATE : 11/11/1911
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 460000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	0	465000	0	0
TOTAL COSTS	0	0	0	465000	0	0

OBJECTIVE: To design and develop new software to assist in the design and placement of passive snow control measures.

PROGRESS: Contract under negotiation.

SIX-MONTH PLAN: Contract approved; work begun.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R22801881 TITLE : POST-TENSIONING EX STL BR MEMBERS
SECTION: STRUCTURES INVESTIGATOR: R. MU, O. HAG-ELSAFI
CLIENT : STRUCTURES/HWY MAINTENANCE DIVIONS
CONTRACTOR :

PROJECT INITIATION DATE : 07/08/1997
STUDY PROPOSAL DUE : 01/04/1998
STUDY PROPOSAL COMPLETED: 11/11/1911
STUDY PROPOSAL APPROVED : 11/11/1911
ORIGINAL COMPLETION DATE: 11/11/1911
REVISED COMPLETION DATE : 11/11/1911
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 250000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	0	2000	250000	1615	1615
TOTAL COSTS	0	0	2000	250000	1615	1615

OBJECTIVE: Improve understanding of post-tensioning as a retrofit technique. Develop general design and construction guidelines for strengthening existing steel bridge members by post-tensioning.

PROGRESS: A literature search and preparation for a Study Proposal have started.

SIX-MONTH PLAN: Complete literature review, and survey other state DOTs. Review current design practices in the Department, and prepare a Study Proposal for the project, including research approach and work plan.
current design practice in the Department. Prepare a study proposal for the project, including research approach and a work plan.

09/08/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R21701881 TITLE : DETER OF LONG TERM PERF CHEMI GROUT
SECTION: TECH/TRAN INVESTIGATOR: DR. MATHIOUDAKIS
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 3000
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 60000

PROJECT INITIATION DATE : 08/27/1991
STUDY PROPOSAL DUE : 02/23/1992
STUDY PROPOSAL COMPLETED: 12/30/1992
STUDY PROPOSAL APPROVED : 04/02/1993
ORIGINAL COMPLETION DATE: 05/31/1994
REVISED COMPLETION DATE : 03/31/1998
REVISION NUMBER : 4

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	0	47620	5000	70000	4038	59038
TOTAL COSTS	0	47620	5000	70000	4038	59038

OBJECTIVE: To develop a greater understanding of long-term performance of different types of chemical grouts in concrete.

PROGRESS: Field observations of acceptance testing of anchor bolts have been completed. Report preparations are in progress.

SIX-MONTH PLAN: Complete report.

09/10/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R21801881 TITLE : ENGRG AUTOMATION TOOLS EVAL/IMP
SECTION: TECH/TRAN INVESTIGATOR: BELL
CLIENT : VARIOUS ENGINEERING GROUPS-DEPT
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 20000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	4933	4933	15000	15000	12115	12115
TOTAL COSTS	4933	4933	15000	15000	12115	12115

OBJECTIVE: To evaluate and provide recommendations, budget and puchasing support, implementation plans, standards and procedures review, coordination and guidance on emerging engineering information technology that is consistent with the needs of the Office of Engineering.

PROGRESS: Investigations and recommendations have been performed and completed on the following: (1) Engineering Workstation/PC Evaluation, (2) Re-Use Analysis of Unix Workstation Monitors; (3) Windows NT Operating System, (4) Drainage software, (5) Help desk software, and (6) Software maintenance and support analysis.

Continuing investigation and evaluation is in progress on:
(1) Engineering copiers, (2) Survey Data Collection Software, (3) Value Added Reseller maintenance support, (4) Visualization hardware and software, (5) Internet/Intranet Web Page software application, (6) CADD-Based Expert System for Blowing Snow Control, and (7) Transition of engineering applications software to Windows NT Operating System.

We anticipate the investigation and analysis list to grow and our activities in this area to broaden now that we have become more formally active in research and evaluation of engineering information technology as part of EAG Operation Plan.

SIX-MONTH PLAN: Continue with research and analysis on the identified areas listed above. Develop implementation plans for completed evaluations to determine the appropriate extent of budget and procurement assistance and ensure coordination and guidance is provided to best meet the needs of the Office of Engineering. Assistance will also be necessary for updating the CADD server environment with the transition from the DOS platform to the Windows NT Operating System platform.

09/08/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R22001881 TITLE : EVALUATION OF WINTER TRAF ACCIDENT
SECTION: TECH/TRAN INVESTIGATOR: DR. ELKORDY
CLIENT : MAINTENANCE/TRAFFIC & SAFETY
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 3500
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 106000

PROJECT INITIATION DATE : 04/27/1992
STUDY PROPOSAL DUE : 10/24/1992
STUDY PROPOSAL COMPLETED: 12/02/1992
STUDY PROPOSAL APPROVED : 06/11/1992
ORIGINAL COMPLETION DATE: 12/31/1995
REVISED COMPLETION DATE : 12/31/1998
REVISION NUMBER : 3

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	1661	52469	15000	106000	12115	88115
TOTAL COSTS	1661	52469	15000	106000	12115	88115

OBJECTIVE: To find out if winter severity has statistically significant impact on vehicle traffic accidents. If impact does exist, to quantify the relation between winter severity and snow related traffic accidents.

PROGRESS: The efforts to complete this project have been delayed because accident data was not available in GIS format until recently. Accident data has now been obtained in GIS format. Analysis of these data in conjunction with traffic count data is currently in progress.

SIX-MONTH PLAN: To complete the analysis of the data and produce a draft report.

SECTION III

Proposed Projects Not Yet Initiated

PROJECT: 93-052 **DEVELOPMENT OF IMPROVED PAVEMENT PERFORMANCE PREDICTION MODEL**

PROBLEM: The Department's current pavement management system plan calls for the development of model to predict performance of both rehabilitation and maintenance treatments, given site specific variables such as soils, climate, and traffic. Volume II of the Rehabilitation Manual only gives average expected service lives under limited conditions for each treatment. Predicts service life is an important input to the life-cycle cost analysis, whose results will decide the selection o the preferred treatment for each projects. NYSDOT does not have any formal and comprehensive pavements performance prediction models that can meet this pavement management requirement. The AASHTO pavement performance model that NYSDOT recently adopted was only calibrated with very limited past performance and experience.

OBJECTIVE: Validate and calibrate the AASHTO performance model. Develop new models that can predicts the effect of each rehabilitation and maintenance treatment on safety, serviceability, and service life of a projects, by properly considering relevant variables including soils, climate, traffic drainage features, and existing pavements conditions.

BENEFITS: At the project level, designs can be effectively made to accomplish the goals of improving safety and serviceability with the prediction models. The life-cycle cost analysis can yield more accurate results and the most cost-effective treatment can be selected. At the network level, the long-term future needs estimating can be based on the predicted service lives of the treatments.

CLIENT: Pavement Management Group, Office of Operations
Technical Services Division
Facilities Design Division

SECTION IV

POOLED SPR FUND PROJECTS

New York State Department of Transportation
Transportation Research and Development Bureau

Performance Evaluation of Crumb Rubber Modified (CRM) Asphalt Pavements SPR-2 (166)

The growing nationwide interest in alternative uses for scrap tires has caused many state highway agencies to study and consider the use of CRM technology in asphalt pavements. There are two principal unresolved issues related to the use of CRM in asphalt paving materials. These modified asphalt mixtures must be field evaluated to establish expected levels of performance and cost-effectiveness. In addition, the ability to recycle asphalt paving mixes containing CRM has not been demonstrated.

These unresolved issues have been identified for study by the Secretary of Transportation in Section 1038 of the Intermodal Surface Transportation Efficiency Act (ISTEA) enacted in December 1991. The congressional study will collect and evaluate all existing available data. This pooled-fund study will address areas of field performance, cost-effectiveness, and recycling of CRM asphalt pavements which are not adequately resolved in the ISTEA study. In addition, the Administrator of the Environmental Protection Agency has the responsibility to determine the environmental and health effects of using CRM asphalt pavements and recycling pavements already containing crumb rubber. A potential exists for coupling this effort with pooled-fund projects.

The objectives of this study are:

1) Conduct laboratory evaluations of CRM asphalt mixtures to determine mix design and laboratory performance characteristics.

2) Design and construct test sections of CRM asphalt pavements in various climatic regions of the United States, including appropriate control sections, to evaluate field performance.

3) Conduct annual evaluations and document field performance of recycled CRM asphalt pavements.

New York State Contributions:

FFY 1993 - $5,000
FFY 1994 - $5,000
FFY 1995 - $5,000
FFY 1996 - $5,000
FFY 1997 - $5,000
FFY 1998 - $5,000
FFY 1999 - $5,000

New York State Department of Transportation
Transportation Research and Development Bureau

High Strength Concrete for Bridges
SPR–2 (170)

In the 1950s, practice in the United States called for 4,000 to 5,000 psi (27.5 to 34.5 MPa) strength for prestressed concrete. Prior to the 1970s, concrete designers were content with the utilization of 5,000 and 6,000 psi (34.5 and 41 MPa) strength concrete as easily attainable compressive strengths for structural members. Then, during the late 1970s and early 1980s, it was demonstrated that the application of 9,000 to 11,000 psi (92 to 76 MPa) strength concrete was not only practical, but economically feasible. Now, concrete with compressive strengths of 15,000 to 20,000 psi (103 to 138 MPa) is commercially available in the United States.

Over the past 15 to 20 years, considerable research, including SHRP, has been conducted on high strength concrete, primarily dealing with the selection of materials, development of concrete mix design criteria, determination of basic physical properties of the concrete, and the structural behavior of members made of high strength concrete. Research on the benefits of using high strength concrete for bridges has shown that bridge span capacities can be increased, wider girder spacings (and hence a fewer number of girders) can be used, concrete compressive and flexural capacities can be increased, and that concrete durability can be improved. However, despite all of these positive research results, relatively little has been done regarding the implementation of high strength concretes in bridges.

The objective of the proposed study is to design, build, instrument, and test a bridge constructed almost entirely of high strength concrete, so as to encourage states to incorporate this technology into their bridge programs. This objective can be accomplished by the following tasks:

1. Design a bridge deck, superstructure, and substructure to be constructed of concrete with compressive strengths ranging from 10,000 to 12,000 psi (69 MPA to 83 Mpa). The bridge would be a reasonable length.

2. Work with concrete suppliers and testing organizations to develop appropriate quality control procedures and testing.

3. Construct the bridge using local labor forces so as to demonstrate any needed re-training.

4. Instrument the bridge and monitor its performance for an appropriate period of time (about 3 years).

Other countries, such as Canada and France, have already constructed or are planning to construct experimental high strength concrete bridges such as the one proposed here. It is hoped that the U.S. can effectively use this technology for our nation's bridges. A recent progress report (December 1992) by the Construction Technology Laboratory and Tulane University for the Louisiana Department of Transportation and Development, "Feasibility Evaluation of Utilizing High Strength Concrete in Design and Construction of Highway Bridge

Structures" is available from Harold "Skip" Paul of the Louisiana Transportation Center (phone: (504) 767-9124; fax: (504) 7676-9108). Also a recent state-of-the-art paper, "High Strength Concrete Bridges" is available from Sue Lane, the FHWA contact.

New York State Contributions:

FFY 1994 — $20,000
FFY 1995 — $20,000
FFY 1996 — $20,000
FFY 1997 — $20,000

New York State Department of Transportation
Transportation Research and Development Bureau

Development and Validation of Traffic Data Editing Procedures
SPR-2 (182)

All states are involved in Traffic Data Program(s) that involve traffic counting, Automatic Vehicle Classification (AVC), and Weigh-in-Motion (WIM) activities. The study will develop automated editing procedures for the count, classification, and WIM data. The products will include software for identifying "questionable/invalid" data, processing the edited (acceptable) data and appropriate reporting of processed data.

New York State Contributors:

FY 1995 - $15,000
FY 1996 - $15,000
FY 1997 - $15,000

New York State Department of Transportation
Transportation Research and Development Bureau

Long-Term Field Monitoring of Migrating Corrosion Inhibitors SPR - 2 (184)

The rehabilitation of corrosion-damaged, and chloride-contaminated concrete structures has become a major activity within state bridge maintenance programs. In many cases, repair techniques include the removal of deteriorated concrete, which is then replaced with new concrete, in the form of patches or an overlay. Although new concrete generally provides a passive environment for reinforcing steel, corrosion may continue, or be initiated due to potential differences between the new and old concrete. The use of corrosion inhibitors is one of the techniques used to mitigate continued corrosion of the reinforcing steel in the newly rehabilitated structure. These inhibitors are usually either applied to the scarified surface prior to patching, or included as an admixture to the patch material.

As part of SHRP Contract C-103, four (4) of the most promising corrosion inhibitors for these applications were tested and evaluated under laboratory conditions. Although positive results were obtained using actual bridge deck specimens, the need exists to evaluate these inhibitors on in-service structures.

The monitoring of full-scale treatments is proposed to gain more data on the length of time that the various inhibitors are actively providing protection, and environmental conditions that aid or hinder their effectiveness. Also, a field evaluation project would provide cost data for full-scale treatments. In addition to further evaluation of inhibitor effectiveness, a field study would identify special procedures and precautions that are required for success of the treatment. These include: construction delays associated with the use of inhibitors; how bond strength of the new concrete is effected, including procedures necessary to maximize the bond strength; and, the compatibility of the inhibitors with other corrosion protection methods.

These data could then be used to identify circumstances best suited for the use of inhibitors, and develop guidelines for proper application of the treatments.

New York State Contributions:

FFY 1996 - $6,000
FFY 1997 - $6,000
FFY 1998 - $6,000
FFY 1999 - $6,000
FFY 2000 - $6,000

New York State Department of Transportation
Transportation Research and Development Bureau

Roadside Safety Hardware Crash Tested to NCHRP Report 350 SPR 2- (187)

NCHRP Report No. 350 contains recommended procedures for crash testing and evaluating highway safety features. The objective of this study is to use finite element analysis and crash tests to evaluate various types of safety appurtenances that would be used in several States that were not tested in other programs.

New York State Contributions:

FFY 1996 - $5,000
FFY 1997 - $5,000
FFY 1998 - $5,000
FFY 1999 - $5,000

New York State Department of Transportation
Transportation Research and Development Bureau

Support, Maintenance and Refinement of the National Transportation Control/ITS Communication Protocol (NTCIP) SPR 2- (189)

The NTCIP is a collection of public domain communication protocols which standardize the interconnectivity of traffic control devices and traffic control centers. These protocols are being developed to ensure the integration of ITS technologies with existing and future electronic highway infrastructure. Although the current development effort is focusing on the interconnectivity of traffic signal controllers, efforts to develop communications protocols for variable message signs, ramp metering devices, closed circuit television systems, highway advisory radio, and other related devices are already underway.

The objective of this effort is to provide for the support maintenance, and refinement of the protocol over the next five years.

At least two States have already passed legislation requiring interconnecting capability among the different traffic control devices and it is expected that other States will also follow this trend.

New York State Contributions:

FFY 1996 - $5,000
FFY 1997 - $5,000
FFY 1998 - $5,000
FFY 1999 - $5,000
FFY 2000 - $5,000

New York State Department of Transportation
Transportation Research and Development Bureau

Durability of Geosynthetics - Phase II
SPR - 2 (192)

This is the final phase of a project which has been underway since September 1991 to develop testing and interpretation protocols for geosynthetic durability evaluation. Data obtained to date indicate that the geosynthetics tested are considerably more durable than originally estimated and that their degradation response time is nonlinear. Because of this longer degradation time and nonlinearity final results can be more accurately achieved if laboratory specimens which have been incubating for up to 750 days, are allowed to incubate for up to 1000 days. The research will provide clear basic guidance on testing and lifetime predictions for all infrastructure applications involving polymers, providing savings in geotechnical reinforcement applications and benefit other civil engineering polymer applications.

New York State Contributions:

FFY 1997 - $ 10,000

New York State Department of Transportation
Transportation Research and Development Bureau

Bridge Fatigue Screening, Monitoring and Retrofitting Manual
S-98-26

An increase in the number of steel bridges, with extensive fatigue cracking has caused many bridge owners to become concerned about the extent of future fatigue repairs and to seek more ingenious and creative methods for dealing with the cracking problems. The decision to repair fatigue cracks or postpone action until a replacement can be built depends on factors including the consequences of failure, ability to accurately determine stresses, repair complexity, steel material properties, and quality of old welds and design details.

The objective of the research is to develop a comprehensive manual which provides a methodology for determining the severity of fatigue cracking on bridges, and retrofits for fatigue-susceptible bridges and details. The manual will 1) provide a method to screen bridges according to their potential for critical fatigue cracking; 2) recommend methods to analyze stresses and deformations in order to determine which ones to retrofit and/or monitor; 3) describe installation and recommend usage of fatigue monitoring instrumentation; 4) recommend repair and retrofit details which may include predicted life-cycle costs for various repair details.

New York State Contributions:

FFY 1998 - $10,000
FFY 1999 - $10,000
FFY 2000 - $10,000

New York State Department of Transportation
Transportation Research and Development Bureau

Engineered Flowable Fill Bridge Approaches plus Abutment and Culvert Backfill Using Inexpensive Recycled Materials.
S-98-31

The idea of using flowable fill for bridge abutments and low water crossings has been shown viable in field projects but these projects have not documented the performance or design procedure for using the technology. The advantages of using engineered flowable fill near bridge abutments is that it does not require vibratory compaction equipment or labor near the structure, does not settle with time and the pavement can be placed directly on the fill without additional surface preparation. Many states have adopted specifications for flowable fills based on conventional fly ashes, using standard aggregates. This study will attempt to expand the range and content of recycled materials available for use in flowable fills. Non-standard aggregates such as glass cullet, sand blasting wastes and recycled concretes will be explored. Flowable fills can be engineered to have any desired permeability and can accommodate utility work without traffic disruptions. The proposed research would develop specific design procedures for using engineered flowable fill bridge approaches, culvert placements and abutment backfills, giving state highway departments the potential to reduce construction and maintenance costs while meeting their objectives for using waste stream products, reducing landfill space and reducing the areas required for supplying virgin fill and cement.

New York State Contributions:

FFY 1998 - $6,000
FFY 1999 - $6,000

New York State Department of Transportation
Transportation Research and Development Bureau

Optimal Acceptance Procedures for Statistical Construction Specifications
S-98-36

Statistical acceptance procedures are currently used be approximately 75 percent of the states and their use continues to grow. Whether the acceptance procedures lead to simple pass/fail decisions or adjustments in contract price, the proper design of such plans is critical to their performance. Poorly conceived plans may range from being totally ineffective to being impractically severe. The fact that both extremes have been found in published national standards indicates that these problems are not isolated cases but are fairly widespread. There is a need to put statistical quality assurance on a sound scientific and mathematical footing, make it rationally comprehensible to users in the transportation field, and widely disseminate this information in the form of an easily understood reference manual.

The research will 1) analyze the wide variety of acceptance procedures currently in use to determine which are best in terms of sampling efficiency or economics and which best detect poor quality when it exists and accept good quality work a high percentage of the time; 2) clearly explain and demonstrate the advantages and disadvantages of the various methods in an understandable manner; 3) critically examine other decision making procedures used in conjunction with quality assurance programs; 4) identify specific problem areas and pitfalls; 5) address performance relationships, utility of the constructed product and suitable statistical measures of quality.

New York State Contributions:

FFY 1998 - 10,000
FFY 1999 - 10,000

New York State Department of Transportation
Transportation Research and Development Bureau

Compilation and Evaluation of Results from High Performance Concrete Bridge Projects
S-98-39

High Performance Concrete (H.C.) is an engineered concrete with enhanced durability and, if needed, increased strength designed to achieve specified performance characteristics related to durability and strength. Although it has been developed over the past 20 years and has been used successfully in buildings, it had limited use in bridges prior to 1993. In 1993 FHWA initiated eleven bridge projects in ten states which incorporate H.C. in some or all of their bridge elements and which also include materials or structural experimentation.

When bridge engineers designed one of these bridges, they used design equations and guidance provided in the AASHTO Standard Specifications for Highway Bridges. These equations and guidance are for normal concrete and are limited to concretes with compressive strengths less than 10,00 psi (69 Mpa). In contrast, the H.C. bridge projects have designed compressive strengths as high as 14,700 psi (101 Mpa). In order for bridge designers to better utilize this new technology, more accurate equations and better design guidance need to be provided. This can be accomplished through the compilation and evaluation of research results from the joint State-FHA H.C. bridge projects and formatted for inclusion into the AASHTO Standard Specifications for Highway Bridges, the AASHTO LRFD Bridge Design Specifications and the AASHTO Materials Specifications.

New York State Contributions:

FFY 1998 - $10,000
FFY 1999 - $7,500

New York State Department of Transportation
Transportation Research and Development Bureau

Development of Portable Scour Monitoring Equipment
S-98-45

Each year many bridges are subjected to severe flood conditions and highway personnel must make critical decisions regarding the safety of these bridges. Decisions about bridge closure are based on measurements of scour around piers and abutments with portable scour monitoring devices. Portable echo sounders have been developed specifically for this purpose. Current portable equipment is adequate in many situations, however, significant accuracy problems with the use of echo sounders in high velocity streams, shallow water, and streams with very high suspended sediment loads have been noted. These conditions are typical of many alluvial streams where scour problems occur and, while conditions under which echo sounders are ineffective have been identified, the specific limitations of the devices have not been fully investigated. The proposed research would provide designs and proper operating procedures for this equipment allowing efficient and accurate collection of reliable streamed elevations during flooding conditions that can be used to ensure public safety from bridge collapse and prevent unnecessary bridge closure and consequential traffic interruptions.

New York State Contributions:

FFY 1998 - $5,000
FFY 1999 - $5,000

SECTION V

ADMINISTRATION/TRAINING

PROJECT: **10-01 ADMINISTRATION**

SCOPE: A variety of recurring activities are required to administer the Bureau's research program. Charges are made on the basis of the particular service or function performed within the following categories:

Managerial Operations: The day-to-day activities which involve aspects of this Bureau's administration (e.g., inquiries, explanations, and justifications) which must be delegated, clarified, followed up, and finally resolved. These activities also deal with the broad general aspects of administration such as policy, procedures, balance, and funding of the research program. These tasks are performed exclusively by the Director, Section Heads, and Administrative Assistant. The level of effort varies among these individuals depending on their specific responsibilities and assignments.

Program Development: Efforts required to prepare and publish the Bureau's Federal Highway Planning and Research Work Program, and the submission of appropriate projects for consideration in the National Cooperative Highway Research Program (NCHRP), or to FHWA for consideration for administrative contract work, pooled-fund studies, or FHWA research are charged to this function.

Program Control: Activities under this function involve monitoring expenditures and work accomplished in relation to projected progress schedules and budgeted costs. It also concerns efforts directed toward ensuring that the research remains within the stated scope and objectives, and that marginal work or work which is no longer considered necessary by the requesting program manager is terminated.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $330,000

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01001881 TITLE : ADMINISTRATION
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 250000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	263442	263442	330000	330000	266538	266538
TOTAL COSTS	263442	263442	330000	330000	266538	266538

08/19/1997
THRU PAY PERIOD S 8/F21
IAS RUN DATE IS 07/09/1997

NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
PROJECT STATUS REPORT
FHWA SEMI-ANNUAL

PROJECT: R01002881 TITLE : ADMINISTRATION-PROJ SEL/PROG DEV
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 100000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	28769	28769	50000	50000	40385	40385
TOTAL COSTS	28769	28769	50000	50000	40385	40385

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01003881 TITLE : ADMINISTRATION - UTRC
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 12500

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	7098	7098	7500	7500	6058	6058
TOTAL COSTS	7098	7098	7500	7500	6058	6058

08/19/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01004881 TITLE : ADMIN - CONSORTIUM/CONTRACT RES
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT :
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 58000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	56209	56209	83000	83000	67038	67038
TOTAL COSTS	56209	56209	83000	83000	67038	67038

PROJECT: 16-0 TRAINING

OBJECTIVE:

SCOPE:

1. Bob Valenti coordinated a training session with the Consultant Management Bureau, which provided an overview of TR&DB services. The session was held October 22, 1996 and was attended by about 20 employees from the Consultant Management Bureau. Presentations were made by Robert Perry, Robert Valenti, Sreenivas Alampalli, Peter Bajorski, and Wes Yang. The session was video-taped for future reference.

2. Jyotirmay Lall attended a technical training course entitled "W62 Strain Gage Technology Workshop", which was conducted in Raleigh, NC on November 18-20, 1996 by the Measurements Group.

3. Bob Valenti's Training Task Force, developing training for local government highway officials, scheduled a pilot training session for Fundamentals of Bridge Inspection/Preventive Maintenance for May 8, 1997 in Auburn, NY. The Cornell Local Roads Program is assisting in registration.

4. Twenty local government highway officials participated in the pilot session for the training course on Bridge Maintenance and Inspection held in Auburn, NY on May 8. The Cornell Local Roads Program summarized the course evaluations and comments submitted by the participants. Comments were generally very positive.

5. Cornell held its annual Highway Superintendents School on June 2-4, at Ithaca College, Ithaca, New York. There were over 700 local, state and private people in attendance. Bob Valenti attended the planning committee meetings held immediately following the school. A quick review of the rating sheets completed by the attendees indicated satisfaction with the agenda and schedule.

6. Department instructors taught three workshops on Bridge Maintenance and Inspection. This completes the 1997 cycle for the workshop. A total of 134 people attended the eight workshop sessions offered. Response to the course was extremely favorable. A large number of course manuals has been distributed by the Publications/Administration Unit in response to the notice of availability that appeared in the R&D News.

7. Osman Hag-Elsafi attended the "Steel Bridge Design" course at the University of Buffalo during June 23 and July 26, 1997. The course was

sponsored by the National Steel Bridge Alliance/American Institute of Steel Construction , and covered design of steel bridges according to the recent AASHTO LFRFD specifications. The course requirements included development of Mathcad programs for design of simple span and continuous steel bridges, analysis of curved girder bridges by the V-load method, and a research project. For his research project, Osman developed a Mathcad program for the design of bolted field splices.

8. Over 80 local government people attended four July sessions of the Training/Communication Workshop sponsored by DOT and the Cornell Local Roads Program. TR&DB's Publication Unit was instrumental in seeing that the manual for the workshop was edited, reproduced and sufficient copies printed in time for the scheduled sessions. Four additional sessions are planned for August.

STATUS: Continuing

ESTIMATED 1997-98 COSTS: $40,000

CLIENT: All Department Units

09/09/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01600881 TITLE : TRAINING
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT : VARIOUS
CONTRACTOR :

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 30000

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	33973	33973	40000	40000	32308	32308
TOTAL COSTS	33973	33973	40000	40000	32308	32308

SECTION VI

COMPLETED PROJECTS

TR&D PUBLICATIONS DURING THE PERIOD 10/1/96 TO 9/30/97

Research Reports

RR 167	Standards for Noise Barriers Using Recycled-Plastic Lumber	11/96
RR 168	Safety-Based Bridge Overstress Criteria for Non-Divisible Loads	4/97

Special Reports

SR 124	Full-Depth Shear-Key Performance on Adjacent Prestressed-Beam Bridges	3/97
SR 125	Rubber-Modified Asphalt-Concrete Overlays: A Summary of Field Performance	5/97
SR 126	Wind Loads on Untethered-Span-Wire Traffic-Signal Poles	6/97
SR 127	Effectiveness of Shoulder Rumble Strips: A Survey of Current Practice	9/97

Client Reports

CR 77	Cost Reductions in Cleaning Auto Parts	11/96
CR 78	Load Tests of A Severely Curved Steel I-Girder Bridge	1/97

Other Publications

Transportation R&D News (quarterly newsletter): Nos. 68, 69, 70, 71, and No. 72 (in preparation)
TNT: Technology News Transfer (quarterly newsletter): Vol. 8, Nos. 1, 2, 3, 4

A Manual of Policies and Procedures for Operation of the TR&D Bureau	9/97
Implementing SHRP Products in New York: Fourth Progress Report	9/97
Fundamentals of Bridge Maintenance and Inspection (Manual for a Workshop/Training Course Conducted with the Cornell Local Roads Program)	5/97
AASHTO Guide for Development of Rest Areas (1997 Draft of a Forthcoming Publication)	

Papers Presented at the 1997 TRB Annual Meeting (edited 12/96 as preprints and before final submission 4/1/97)
- Applying Statistical Methods for Further Improvement of High-Performance Concrete for NYS Bridge Decks
- Diagnostic Load Testing for Bridge Load Rating
- Estimating Peak-Hour Pedestrian Traffic for CBDs and Suburban Corridors: A Sketch-Plan Method
- Standards for Noise Barriers Using Recycled-Plastic Lumber
- Frictional Characteristics of Sand and Sand-Deicer Mixtures on Bare Ice
- Field Experience with High-Performance Concrete on New York State Bridge Decks

Papers Submitted for Presentation at the 1998 TRB Annual Meeting (edited before submission on 8/1/97)
- Automated Consolidation Testing of Soils: Comparison of Equipment and Testing Programs
- Capacity-Building for State Transportation Researchers: New York's Experience
- In-Service Performance of Shear Keys in Adjacent Prestressed-Beam Bridges in New York
- Long-Term Performance of Integral Bridges and Jointless Decks
- Strength Criteria for Cast-Iron Items in Highway Drainage Structures
- Using Infinite Elements in Surface Wave Analysis of Pavements and Layered Soils -
- Work-Zone Accidents Involving Traffic-Control Devices and Safety Features

SECTION VII

100% STATE FUNDED PROJECTS

09/09/1997 NEW YORK STATE ENGINEERING RESEARCH AND DEVELOPMENT BUREAU
THRU PAY PERIOD S 8/F21 PROJECT STATUS REPORT
IAS RUN DATE IS 07/09/1997 FHWA SEMI-ANNUAL

PROJECT: R01001801 TITLE : ADMINISTRATION STATE FUND EFFORTS
SECTION: ADMINISTRATION INVESTIGATOR: ALL SECTIONS
CLIENT : N/A
CONTRACTOR :

PROJECT INITIATION DATE : 10/01/1996
STUDY PROPOSAL DUE : 03/30/1997
STUDY PROPOSAL COMPLETED: 10/01/1996
STUDY PROPOSAL APPROVED : 10/01/1996
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1997
REVISION NUMBER : 0

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 90000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	35508	35508	60000	60000	48462	48462
TOTAL COSTS	35508	35508	60000	60000	48462	48462

PROJECT: R01239801 TITLE : UTRC - CURING
SECTION: MATER./PAVING INVESTIGATOR: CHOU
CLIENT : STRUCTURES/MATERIALS
CONTRACTOR : RPI

PROJECT INITIATION DATE : 01/20/1993
STUDY PROPOSAL DUE : 07/19/1993
STUDY PROPOSAL COMPLETED: 02/05/1993
STUDY PROPOSAL APPROVED : 09/01/1994
ORIGINAL COMPLETION DATE: 09/30/1997
REVISED COMPLETION DATE : 09/30/1998
REVISION NUMBER : 1

APPROVED STUDY PROPOSAL AMOUNT : 1
ACTUAL STUDY PROPOSAL AMOUNT : 0
APPROVED ORIGINAL BUDGET AMOUNT: 10000

	ACTUAL EXPENDITURES		PROGRAMMED EXPENDITURES			
	YTD	LTD	YEAR TOTAL	LIFE TOTAL	YTD SCALED	LTD SCALED
PERSONAL SERVICE	22190	94331	0	5000	0	0
TOTAL COSTS	22190	94331	0	5000	0	0

OBJECTIVE: To perdict the temperature and water fraction profiles that exist during the first 72 hours of curing in concrete pavements and bridge decks using conventional (Class H) concrete or high performance (Class HP) concrete, and to determine under what conditions concrete can be successfully place.

PROGRESS: (1) A meeting took place in ASRC of SUNYA for estimating the spraying water rate on the Morningkill bridge deck. The problem of missing water spraying rate data has been solved, (2) A draft report for Morningkill bridge deck experiment has been completed.

SIX-MONTH PLAN: Complete the final report.

01693
LRI